New Orleans Medical
and
Surgical Journal

$3.00 Per Annum, 35c Per Copy
Vol. 101—No. 6

DECEMBER, 1948

Published Monthly
1430 Tulane Avenue, New Orleans 12, La.

CLINICAL FEATURES OF A SUMMER DISEASE (THREE-DAY FEVER)

APPARENTLY OF VIRUS ETIOLOGY*

C. H. WEBB, M. D., S. GEO. WOLFE, M. D.†
AND
VERRE SIMPSON, M. D.‡

SHREVEPORT, LOUISIANA

The efficacy of the antibiotics and sulfonamides in controlling bacterial infections has brought into clearer focus the numerous illnesses of childhood which are of nonbacterial—and presumably of viral causation. Whether or not there has been an actual increase in viral diseases, the physician who is in pediatric or general practice has an increasing awareness of the hitherto unrecognized viral etiology of many acute infections.

In 1946 we reported a series of cases of acute infectious hepatitis.[1] At that time we called attention to a number of bizarre clinical pictures which failed to fit the accustomed categories of acute pediatric disease. We postulated that some of these might represent milder childhood manifestations of virus infections which in the older individual produce a more distinctive and more easily defined clinical entity. It has been observed repeatedly during epidemics of known or presumed virus origin, such as hepatitis, poliomyelitis, pneumonitis, or gastroenteritis, that subclinical or atypical cases are frequently encountered. It is possible that the younger child is peculiarly prone to exhibit acute systemic reactions without showing expected localizing manifestations.

Two other possibilities must be considered. First, there may be other viruses which, like herpes simplex, are comparatively innocuous to the adult but may produce acute illness in the child. Dodd and Euddingh[2] demonstrated that herpes simplex often causes severe, febrile, acute gingivostomatitis in the young child, whereas in the adult it rarely produces more than "cold sores" or "fever blisters".

During the past summer we saw a number of children of school age who became ill with high fever, headache, and vesicular studding over the soft palate or pharynx. Herpes etiology was suspected because of concomitant gingivostomatitis in two instances and a history of a parent with "fever blisters" in a third case. Material obtained from the pharynx of a child, acutely ill with typical vesicular pharyngitis, when transferred to the scarified cornea of a rabbit produced a characteristic keratoconjunctivitis, followed by encephalitis and death of the animal. This patient showed no evidence of gingivitis. It seems well demonstrated, therefore, that the virus of herpes simplex may produce acute gingivostomatitis in the very young child and herpetic pharyngitis in the older child, but is generally benign in the adult.

Second, there is a strong possibility that a number of acute infections of viral eti-

*Read before the Section on Pediatrics, Louisiana State Medical Society at the 68th Annual Meeting, Monroe, La., April 14, 1948.

†Children's Clinic, Shreveport, Louisiana.

‡Caddo-Shreveport Health Unit, Shreveport, La.

ology are unknown or undifferentiated. For example, it is generally conceded in recent years that certain types of pneumonitis and gastroenteritis are of viral etiology. Acute follicular tonsillitis, diarrhea of the newborn and sublingual glossitis of the newborn are other pediatric entities which are recent additions to the list of probable virus infections.

In our previous discussion of bizarre clinical pictures,[1] we called attention to a group of children, observed during the summer of 1946, who exhibited hyperpyrexia and headache without other demonstrable signs. The illness lasted three to five days and cleared as mysteriously as it developed. After this report at the Southern Medical Association, pediatricians from other southern states told us of having observed similar outbreaks during the same summer. In our locality, the 1946 outbreak was limited to the months of May and June.

PREVALENCE DURING 1947

During 1947, a more extensive outbreak of what appeared to be the same illness occurred in this area from the latter part of June until mid-September. During this period, the infection which we describe accounted for a considerable proportion of acute illnesses among the children of Shreveport and was highlighted because of the absence of other epidemics. We learned that a pandemic of a similar disease was present in a number of localities throughout the United States and was generally called "three-day fever". This seemed to differ from the "Virus X" of California, which at least in part is now known to be Influenza A.[3] Laboratory studies conducted elsewhere, aimed at identifying a specific virus, gave negative results, so far as we can learn.

Clinical records reveal 40 children examined during the summer of 1947, whose symptoms seemed rather typical of this disease. Eight other patients are listed as possible instances, although subject to some doubt because of certain unusual features. The Caddo-Shreveport Health Unit made epidemiological studies of 30 of our "typical" and 8 "possible" cases, in addition to 4 "typical" and 7 "possible" which were seen by other physicians.* In addition, we had histories of 22 children and 3 adults, not seen by us, who were in contact with our cases and had a similar illness. Many suspected cases were treated by telephone. Observations by other physicians strengthened our belief that an epidemic existed, not only in Shreveport, but also in surrounding communities. Five children in our series were brought in from towns in the surrounding area.

EPIDEMIOLOGY

This epidemiological study is based upon clinical records of patients studied, in addition to information obtained from their parents during home visits made by the Public Health Nursing personnel of the Caddo-Shreveport Health Unit. The figures will be presented as they pertain to the two groups under consideration; first, 34 children in which the clinical features were those of "Three-Day Fever", and second, 15 additional cases in which this diagnosis was deemed a possibility.

Vector: Water and milk supply, food and insects were evaluated as possible vectors of the disease. The source of water was determined in every case and found to be uniformly city water, except in the three instances in which the patients had made recent trips out of town. However, for many years there has been no sudden epidemic in which the municipal water supply was incriminated or reasonably suspected. Pasteurized or evaporated milk were the only types consumed by any of the patients. Definite conclusions regarding food were impossible; however, none of the histories cast suspicion on the quality or source of foods ingested. As for insect vectors, in 18 of the 34 cases a history was given of bites or contact with mosquitoes and/or red bugs; 2 additional cases were in contact with but not bitten by ticks. Of the 15 possible cases, 5 gave a history of mos-

*We appreciate the cooperation of Doctors W. B. Worley and T. E. Strain, who submitted names of patients to the Board of Health.

quito contact. Because of the prevalence of these insect bites at this season of the year, particularly among the age group involved, these findings were not regarded as significant.

Out of Town Contacts: Only 10 of 34 patients had been out of the city during the summer, and of these 10 only 3 within a week of the onset of their illness. Of the 15 possible cases, however, 10 had been out of town, and 4 of these within a week of onset.

Contagion: Distribution of cases among families serves to demonstrate to some extent the degree of contagiousness of the infection. Out of 34 cases, 20 occurred among family groups, with one adult member showing similar manifestations. In 17 instances previous contact with a child, presumably suffering from the same illness, was established. In 7 instances the contact was found in the patient's own family, while in 10 cases the contact was a playmate. There are histories of the disease having spread from 10 children of our series to an additional 12 individuals, 8 of whom were in the family group and 4 outside of the family. The remaining 24 of the series did not spread the illness to other individuals, so far as could be determined.

Seven of the 15 possible cases occurred among siblings, again with 1 adult member presenting similar symptomology. There were also 7 instances of antecedent contact with children who had similar illnesses. Further, there were 10 cases occurring as a result of contact with 8 of these possible cases.

In addition to established contacts, 11 of the 34 patients in the first series and 8 of the 15 possible cases gave a history of swimming within one week before onset of their illness.

Incubation Period: Among the 17 instances in which a history of contact was established, the suggested incubation period varied from 2 to 7 days, with the majority approximating the average of 4.8 days. In the group of possible cases the indicated incubation period was found to range from 4 to 14 days, with an average of 6.6 days.

Seasonal Incidence: The distribution of cases by month was as follows: June—1; July—6; August—6; September—21; In the possible cases: June—1; July—2; August—2; September—10. It is of interest to note that during these months very few other contagious diseases were reported among children. The incidence of poliomyelitis, for example, was unusually low for the entire year of 1947. Three cases of this disease were reported from the city during the month of June, three during July and none during August or September.

Conclusions: It is apparent from a study of these records that no final conclusions can be drawn regarding the mode of infection in "Three-Day Fever". The evidence suggests that it is not spread by water or milk supply, food or insect vectors, but rather by direct contact, person to person. There is no definite indication as to portal of entry or whether swimming plays any significant role in its spread. The incubation period is believed to be under one week, most often four to five days. The disease is mildly contagious and affects children more often than adults.

CLINICAL FEATURES

Half of the 48 children were between six and twelve years of age, 20 were between one and five years, and only 4 were less than one year old. Extremes varied from five months to twelve years. As noted above, only 3 adults showed evidence of having acquired the infection.

The *onset* was typically abrupt, without prodromal symptoms. Sudden high fever, headache and malaise were characteristic early symptoms. A few children had low grade fever on the first day, rising higher on the second day, but this was rather unusual. Only three children in the series had nausea or vomiting on the first day of illness and only one complained of abdominal discomfort.

The *temperature*, characteristically, was elevated throughout the illness (Fig. 1), ranging between 101 and 104° F. A few children had one febrile day, followed by one to three days of normal temperature,

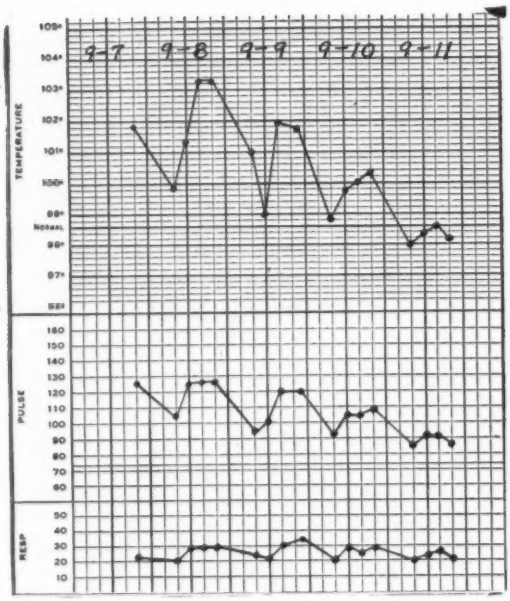

Fig. 1. Graphic chart of temperature, pulse and respiratory rates, B. M., age 6 yrs.

then a secondary rise for two to four days. The highest recorded temperatures in our series varied from 101 to 105° F., with most of the children (Table 1) having peak elevations of 103-4° F. With hyperpyrexia, the headache, discomfort and restlessness were usually pronounced; between elevations of temperature the children often felt so well that it was difficult to keep them quiet or in bed. After two to four days, the temperature subsided rapidly and the child, in the words of one mother, "got well as dramatically as he became ill".

Headache was complained of by every child over five years of age, and by several of the three to five year olds (Table 1). This headache often vanished after 24 to 48 hours, although it sometimes lasted throughout the febrile course. It was often intense, and was exacerbated by hyperpyrexia. When localized, it was usually frontal in distribution.

Generalized myalgia occurred in about one-third of the cases. Several of the children complained bitterly of leg ache. Five children had backache or neck pains. In 2 instances the association of high fever, headache, backache and neck stiffness led to spinal fluid examinations but results were negative in each instance.

Respiratory symptoms were unusual. A minority of the children mentioned dryness of the throat and cough was present in only two instances. Only 3 children had generalized upper respiratory infections following the febrile course. Conjunctivitis occurred in 4 cases considered as typical and in 4 of 8 possible cases. In several of these, the conjunctivae were mildly injected, with lacrimation or mucoid stickiness of the lids. In 3 instances, however, a rather violent conjunctivitis was present, with subconjunctival hemorrhages in 1 case.

Gastrointestinal symptoms were minimal. Of the 40 cases, 4 had nausea or vomiting, 1 had loose stools and 1 complained of abdominal pain. Three of the 8 "possibles" had loose stools and vomited moderately. Anorexia usually accompanied the febrile course, but appetite was regained rapidly.

TABLE 1

SYMPTOMS OF THREE-DAY FEVER—40 CHILDREN

Temp. 103° F. or more	26	Conjunctivitis	4
Headache	23	Cough	2
Myalgia or leg pains	11	Nausea or vomiting	5
Backache or neck pains	5	Abdominal pain	2
Three-day duration of fever	24	Diarrhea, chilliness, paresthesia, drowsiness	1

Less frequent symptoms were: drowsiness in two instances, one child continuing to be unusually drowsy for nearly a week after subsidence of fever; restlessness in infants and younger children; chilliness as a definite complaint by 1 child; and temporary paresthesia in 1.

Duration of the illness varied from 24 hours to 6 days in the cases considered typical, and averaged 3.3 days. In 24 of

40 instances, the duration was exactly 3 days, hence the name "three-day fever". In the cases considered "possible", duration was more variable, from 2 to 10 days, with an average of 4.5 days.

PHYSICAL FINDINGS

On examination, these children showed a paucity of findings. Mild to moderate injection of the pharynx was frequent but not invariable. Pulse and respiratory rates were proportionate to the temperature elevation (Fig. 1). Absence of skin rashes and lymphadenopathy was striking. The spleen was palpated in only two instances. As noted under symptomatology, a few children had conjunctivitis, possibly fortuitous. Generally, the children did not seem as prostrated or toxic as might ordinarily be expected with the degree of hyperpyrexia noted. Despite headache and myalgia, only two children exhibited stiffness of the neck or back and no other abnormal neurological manifestations were elicited.

LABORATORY DATA

Extensive laboratory investigations were not made. Single blood counts were secured from 15 of the children who were considered to have typical attacks (Table 2). The leucocyte counts were normal to low, and less than 10,000 cells per cu. mm. in every instance (Table 2). The differential counts varied, a preponderance of neutrophiles occurring in 9 instances, of lymphocytes in 6. Eosinophile counts tended to be low. Erythrocyte counts and hemoglobin estimations gave normal values.

Through the cooperation of one mother, a former laboratory technician, daily blood counts were secured from her children, eight and six years of age, as well as temperature, pulse and respiration recordings (Fig. 1) on the younger child throughout his illness. Both children exhibited characteristic symptoms of sudden fever, headache, muscle pains and anorexia of four days duration. These blood counts (Table 3) presented our first opportunity to note changes which occur in the hemogram during and after this infection. Slight fall in the total white counts, which were never high, occurred after subsidence of fever. The relative neutrophile preponderance during the illness shifted to the nearly equal neutrophile-lymphocyte ratio expected at this age. The younger child, who also has asthma, showed transient depression of eosinophiles, with return to their usual level of 7-9 per cent as his infection subsided. Atypical lymphocytes, similar to those which we have found in many other virus infections,[1] were present on one or more occasions. Appearance of these atypical lymphocytes in smears from B. M. only in the latter part of his illness and their increase during the two days after recovery may explain failure to find them more than twice among 15 blood examinations from the other patients (Table 2).

TABLE 2

BLOOD COUNTS IN TYPICAL CASES

Patient	Age	Day of Illness	Leucocyte Count	Neutrophiles per centum	Lymphocytes per centum	Eosinophiles per centum	Basophiles per centum	Monocytes per centum	Atypical Lymphocytes
B.D.S.	5 mos.	1	9800	50	40	2	0	8	—
R.A.	6 mos.	2	9500	26	64	0	0	10	—
D.R.	2 yrs.	2	5950	19	74	2	0	5	—
S.L.P.	3½ yrs.	2	4800	50	40	1	0	9	—
A.R.	3½ yrs.	2	6100	37	55	2	0	2	—
M.S.	5 yrs.	2	9900	60	35	1	0	4	—
J.E.	6 yrs.	1	9200	95	4	1	0	0	—
D.M.‡	8 yrs.	2	3450	43	45	3	2	7	—
B.L.	11 yrs.	2	4250	56	33	0	0	11	—
T.P.	7 yrs.	4	9550	45	47	0	0	8	+
J.M.	1½ yrs.	*	8950	30	63	1	1	5	—
B.B.	5 yrs.	2	5300	56	29	1	0	14	+
B.B.	3 yrs.	3	5200	50	43	3	0	4	—

‡Stiff neck. Spinal fluid cell count 2, normal globulin.

*One week after illness.

Pharyngeal smears from 2 children showed a mixed flora, with a scant growth of Beta *hemolytic streptococcus* in one culture, *staphylococcus albus* in the other. Smears from the eye in two instances of rather severe conjunctivitis showed no organisms and few or no pus cells. However, a number of vacuolated mononuclear cells were found.

Examinations of urine were normal in

TABLE 3

DAILY BLOOD COUNTS IN SIBLINGS WITH TYPICAL ILLNESS

Patient	Date	Day of Illness	Highest Temperature	Leucocyte count	Neutrophiles per centum	Lymphocytes per centum	Eosinophiles per centum	Basophiles per centum	Monocytes per centum	Atypical lymphocytes
	9- 6-47	3	102.2	8750	66	19	2	0	13	occas.
	9- 7-47	4	100	8888	43	46	5	0	5	0
L.M.	9- 8-47	....	98.8	7900	45	45	0	0	10	0
8 yrs.	9-12-47	....	.....	7650	45	40	6	0	6	0
	9- 7-47	1	101.8	7000	60	30	2	0	8	0
	9- 8-47	2	103.4	7500	57	36	3	0	4	0
	9- 9-47	3	102	8150	57	39	1	0	3	1%
B. M.	9-10-47	4	100.4	7900	57	24	6	1	12	2%
6 yrs.	9-11-47	....	98.6	7900	42	43	7	1	7	2%
	9-12-47	....	.....	6150	47	27	9	1	16	3%

7 instances. Two voided specimens contained traces of albumin and a moderate number of pus cells; only one of these was considered to be indicative of urinary infection. This cleared rapidly under treatment and the child's illness in other respects seemed typical of "three-day fever", apparently acquired from a sister who had had a similar episode five days previously.

COMPLICATIONS AND SEQUELAE

Evidence available from this group of patients indicates that complications and sequelae must be infrequent. The conjunctivitis described in 4 typical and 4 possible cases was present from the onset. Organisms were absent from smears and vacuolated mononuclear cells were present instead of neutrophilic pus cells, a finding which we have observed in other nonbacterial (presumably viral) types of conjunctivitis. Present evidence is inadequate to warrant conclusions as to whether conjunctivitis is an integral part of the symptom complex in a minor percentage of cases, whether the 8 cases with conjunctivitis represent infection with an agent different from that of "three-day fever" or whether the conjunctivitis was simply an intercurrent infection. None of the children showed generalized mucosal inflammation such as is described in the Stevens-Johnson syndrome.[4] Three instances of upper respiratory disease almost certainly represented intercurrent infection, also an attack of acute tonsillitis which 1 child developed as the "three-day fever" subsided. There were no instances of pneumonitis, otitis media, or other pyogenic infections and no indication of involvement of any internal organs.

DIFFERENTIAL DIAGNOSIS

When an individual child is found to present the symptomatology of sudden high fever, headache and possible generalized myalgia, with physical findings limited to injection of the pharynx, definitive diagnosis may be difficult. This is especially true during a season when various virus infections are prevalent, since it is known that many of these diseases—for example, influenza, poliomyelitis, dengue, hepatitis—are accompanied by subclinical or milder examples with only generalized atypical symptoms. When, however, numerous individuals exhibit symptoms as described above, in the absence of typical manifestations of other virus infections, one is justified in suspecting this "three-day fever".

TABLE 4

PREVIOUS VIRUS INFECTIONS—30 CHILDREN

Acute Upper Respiratory Infections	20	Measles	8
Gastroenteritis	10	Chickenpox	5
Influenza	4	Roseola Infantum	3
Gingivostomatitis	2	Mumps	10
Poliomyelitis	2	Previous Attack of 3-Day Fever	2
Infectious Mononucleosis	1		

Roseola may be difficult to differentiate from "three-day fever" until termination of the febrile episode *without* appearance of the characteristic rash of roseola. However, intense headache and myalgia are infrequent in roseola; it is more likely to affect younger children and the blood count during the febrile stage of roseola demonstrates a relative lymphocytosis with leucopenia in nearly every instance.

Acute pharyngitis or tonsillitis of bacterial origin may offer difficulties in diagnosis of the individual case, especially if cultures are not made or are indecisive. The pharynx or tonsils are more inflamed by the second day than is expected with "three-day fever" and the white blood count is usually higher, but these may be deceptive. Response to therapy with sulfonamides or penicillin may be expected in these bacterial infections.

Malaria, typhoid, typhus, tularemia, undulant fever and similar continued fevers may be thought of, and one must depend on laboratory procedures and course of the disease to differentiate such infections; this is also true of infections of the urinary tract and many other febrile illnesses of childhood in their inception.

TREATMENT

Twelve children were given penicillin or sulfonamides, either through uncertainty in diagnosis or as a therapeutic trial. No response was noted to these agents or to quinine, which was given to 2 children whose spleens were enlarged. Since this is a self-limited disease, treatment need be directed only toward making the child comfortable, with adequate fluid intake and carbohydrates to prevent dehydration or ketosis. In the 8 instances where conjunctivitis was present, therapy seemed unavailing except as a matter of comfort.

SUMMARY AND CONCLUSIONS

Forty cases of so-called "three-day fever" are reported. Eight additional cases, presumably of the same nature, but in which atypical features occurred, are included. All 48 were observed during the latter part of the summer of 1947, at a time when other diseases of known virus etiology were at a low ebb in this community. Striking features of the disease were sudden onset of moderate to high fever, severe headache, often myalgia, and the absence of notable involvement of respiratory or gastrointestinal tracts. The illness tended to persist for about 3 or 4 days and to vanish as suddenly as it appeared.

Results of routine laboratory procedures suggested a nonbacterial etiology. An epidemiological survey, though limited, pointed toward person-to-person mode of spread with incubation period of four to seven days. The disease does not seem to be highly contagious. Treatment with the various sulfonamides and antibiotics was ineffective.

For reasons mentioned and because of certain experiences in the past, we are inclined to believe that "three-day fever" represents one of the many ill-defined acute infections of childhood due to viral agents.

ADDENDUM

Since the above was written, a report from the U. S. Public Health Service Laboratory, Montgomery, Alabama,[3] suggests on the basis of serum neutralization tests that the virus of pneumoencephalitis of fowls (Newcastle disease) is the etiological agent responsible for epidemics of a similar acute illness occurring among children (and occassionally found in adults) in Tennessee and Alabama during 1947 and 1948.

It is perhaps significant that laboratory personnel working with the virus at that time also exhibited changes in serum neutralization from negative to strongly positive after developing an acute influenza-like illness.

Sera from several children in our series, independent of the above studies, have been reported by the same laboratory to show positive neutralization tests. Conclusive proof by isolation of the Newcastle virus from a human case has not been accomplished.

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KEROSENE POISONING*

NINO A. BOLOGNA, M. D.

AND

NORMAN C. WOODY, M. D. **

NEW ORLEANS

Since the first case was reported in 1897,[1] the importance of kerosene as a cause of accidental poisoning has been widely recognized. Despite a large clinical experience with the effects of this agent, many fundamental questions concerning causes of these effects remain unanswered. It is our purpose here to review briefly some of the known chemical properties of kerosene, the nature of the lesions it produces, and a rather large clinical sample of 252 cases observed at Charity Hospital in New Orleans during the past ten years; by these means it may be possible to arrive at a few conclusions having practical therapeutic merit.

BACKGROUND

Kerosene is a variable mixture of hydrocarbons secured in the process of refining petroleum. It has a distillation range of from 200 -600 F. and is relatively nonvolatile. Because it is a mixture and not a chemical compound, one would expect chemical reactions and physiologic effects to vary widely with samples of varying composition. The only regulation governing kerosene production or marketing, as it affects the public welfare, is one forbidding a flash-point lower than 110 F.

Its composition varies with the type of crude oil from which it is separated, as well as with the refining process used. Aside from petroleum hydrocarbons of varying volatility, it may also contain traces of sulfur, nitrogen compounds, caustic alkalis, and a number of other impurities and solvents. These are present in very small amounts (sulfur not in excess of 0.45 per cent) and the chances that such impurities are responsible for significant toxic effects seem negligible.

The real source of toxicity is probably in particular hydrocarbons. Although definite proof is lacking, it has been pointed out by Machle[2] that of the olefin, naphthene, paraffin and aromatic hydrocarbons present in kerosene and gasoline, the latter two are the most likely offenders. Gasoline, with its higher concentration of aromatic hydrocarbons, is probably more quickly absorbed, but it is reasonable to suppose that kerosene mixtures otherwise act similarly.

It has been estimated that individual batches of kerosene are ten to twenty times more toxic when given intratracheally than when introduced into the gastrointestinal tract.[3] It seems that for man as well as for experimental animals, older individuals suffer fewer ill effects than do younger ones. In addition to variations in make-up of kerosene mixtures and age of patient, opportunities for aspiration, individual susceptibility, and the kind and amount of gastric contents might also be expected to have effects on symptomatology.

In the American medical literature we discovered reports of only six autopsies of human subjects who died from kerosene poisoning. Pathologic changes were strikingly similar to those observed in animals; these reflect three apparent actions—irritant, lipolytic and anesthetic. It seems likely that central depression results at least partly from lipolysis. Since kerosene contains hydrocarbons similar to those commonly used for anesthetics, it is natural to expect that similar central effects would be frequently observed.

The most striking pathologic changes are those invariably present in the lungs. These consist of a variety of lesions, but most commonly patchy or confluent inflammatory edema apparently related to direct irritant effects. Also observed are broncho-

*Read before the Sixty-eighth Annual Meeting of the Louisiana State Medical Society, Monroe, April 14, 1948.

**From the Department of Pediatrics, Tulane University School of Medicine and the Charity Hospital of Louisiana at New Orleans.

pneumonia, bronchiolitis, tracheobronchitis and even ulcerative tracheitis. Three instances of pneumothorax and subcutaneous emphysema have been reported; apparent pneumopericardium was also noted in one of these.[4-6] Lesions observed in other organs are largely explainable on the basis of anoxemia. Cloudy swelling of the liver and kidneys was present in all. The odor of kerosene has been reported from the freshly cut surface of the lungs, of course, but also from the liver.[7]

Direct irritative effects are observed in the gastrointestinal tract where hyperemia, edema, and even ulceration of the mucous membrane may be found in such sites as the mouth, pharynx, esophagus, stomach, and intestines.

Explanations of mechanisms by which kerosene produces pulmonary effects are controversial. Briefly stated, there are two views: one which maintains that lethal effects ensue only if kerosene is aspirated into the tracheobronchial tree, and the other which holds that dangerous amounts may be absorbed from the gastrointestinal tract. Undoubtedly both obtain, though practically the latter seems relatively unimportant. According to this view, extensive pulmonary lesions may be produced by the actions of toxic substance which are absorbed into the circulation and then excreted through the pulmonary alveolar walls.[8] On the basis of animal experiments, pulmonary lesions more clearly result from direct aspiration. Waring[9] and Lesser, *et al.*[10] found no pulmonary lesions unless aspiration had occurred.

The evidence brought forward by such investigations is based on experimental work which is difficult to interpret and which, in some instances, was so organized as to be unphysiologic and hardly related to the problem of poisoning in children. For example, in some experiments pulmonary lesions were found after kerosene was injected directly into the blood stream. This is a type of kerosene poisoning not yet achieved by even the most ingenious toddler.

While speculation cannot lead to definite conclusions, some inferences can be drawn. It is almost certainly true that some fraction of kerosene is absorbed from the gastrointestinal tract into the blood because its common anesthetic action could hardly be explained otherwise. Such anesthetic effects are often seen in children who *never* develop pulmonary lesions. Also, as noted in Table II, pulmonary abnormalities are present clinically in about one-third of the patients who had no history of circumstances to suggest the likelihood that aspiration had occurred. It seems reasonable to believe that the variable composition of kerosene mixtures accounts largely for the diversity of effects observed clinically and experimentally, but that prognosis depends largely on the amount aspirated. In one of our patients, a single teaspoon of kerosene produced death; 2 other children of about the same age, who took as much as 16 ounces each, had no symptoms to suggest that aspiration had occurred, and had no more than transient systemic evidence of toxicity. Certainly, most reports agree with our experience indicating that aspiration into the tracheobronchial tree is the most important consideration by which outcome may be predicted. None of the reports dealing with fatal kerosene poisoning so far have included any chemical studies designed to determine which, if any, particular hydrocarbons seemed to be most likely responsible for lethal effects. If these could be identified, it might be possible to control composition of kerosene mixtures at refineries and thus reduce present hazards to some extent. We hope to report our current work along this line in the near future.

EXPERIENCE AT CHARITY HOSPITAL

At the Charity Hospital in New Orleans for the ten year period of 1937-1947, there are 252 records of kerosene ingestion by children. Seventy-eight per cent of these were in negroes. Ages ranged from 5 to 72 months, and 97 per cent of the patients were between the ages of 6 and 36 months. These figures serve to illustrate the fact that this, like most accidental poisonings, is most frequent in the toddler or runabout age. It is most common, of course, among

groups who use kerosene most frequently for cooking, heating, or lighting and leave it standing about easily available to the small child. Because kerosene is so often stored in bottles, cans, and jugs, and is clear, many children ingest it in the belief that they are taking water; some actually seem to like it— how else could one explain the voluntary ingestion of as much as 16 ounces at one sitting? During this ten year period at Charity Hospital, kerosene ranked first among causes for accidental poisoning in children requiring admission, and fourth among causes of death in this group.

There were 9 deaths among these 252 patients who took kerosene, a fatality rate of 3.6 per cent; this is considerably lower than that of 9.5 per cent obtained from a review of the American literature, which discloses 21 deaths among 220 cases of kerosene poisoning which have been reported since 1897. This difference, of course, is due probably to the fact that most other reports are concerned with small groups and more serious effects. The frequency of the most common clinical manifestation in our patients was compared with a smaller group for which description could be gathered from these other clinical reports which have appeared during the past fifty years.

TABLE I

EFFECTS OF KEROSENE POISONING

	252 Cases Charity Hospital	59 Reported Cases
Pulmonary effects	42%	66%
Aspiration	76%	89%
CNS effects	56%	86%
Cardiac effects	17%	22%
G. I. effects	11%	8%

Though these groups are not strictly comparable, it should be noted that effects on the pulmonary and nervous systems dominate the picture and that expected evidences of gastrointestinal disturbances are relatively inconspicuous. We have not seen nor have we been able to discover a reported death due entirely to depressant effects on the central nervous system. Neither have any been attributed primarily to cardiac, hepatic, or renal failure. Everything points to pulmonary irritation and edema as the principal and most obvious direct cause of death. One might speculate a bit about the findings in Table II. Perhaps relatively small amounts of hydrocarbons reaching the lung only from the circulation, being more dilute, would produce less severe irritation. On the other hand, if aspiration occurs, the insult to the lung is sudden and direct, resulting from a larger and more concentrated dose of toxic hydrocarbons.

No matter what our current experimental studies may indicate concerning the mode of action of kerosene in the production of pulmonary edema, it is apparent at the present time that all deaths have occurred following aspiration, that depressant effects have sometimes been alarming but never fatal *per se*, that gastrointestinal effects seemed of little consequence, and that rational therapy of kerosene poisoning should have as its chief objective the prevention or amelioration of pulmonary edema.

TABLE II

SIGNIFICANCE OF ASPIRATION

	Charity Hospital Group	Reported* Group
Positive History	76%	89%
Abnormal lungs	47%	53%
Died	3.7%	17%
Negative History	24%	11%
Abnormal lungs	33%	83%
Died	0	0

*Incomplete

DISCUSSION

These patients should be carefully appraised when first seen, and classified into one of four groups having an increasingly poor prognosis: (a) Those with only a history of ingestion and no neurologic or pulmonary abnormalities; (b) those with predominant anesthetic effects—drowsy, stuporous or comatose; (c) those in whom circumstances indicate that aspiration might have occurred, and who have respiratory disturbances; (d) those who are depressed and also have signs of pulmonary edema. Patients may move from one group to another with astonishing rapidity. Four lines of attack are open: (1) General supportive measures; (2) management of central nervous system

effects; (3) treatment of pulmonary edema, and (4) prevention or treatment of complications. It is apparent that such lines of therapy will have to be carefully individualized.

General supportive measures are as important in kerosene poisoning as in all other types of poisonings. Occasionally, gastroenteritis may lead to dehydration, electrolyte imbalance, and even medical shock. These should be quickly corrected by usual measures.

Treatment of central nervous system effects. Since fatality is invariably associated with pulmonary edema, it is probably unwise to use mechanical or medicinal stimulants which increase cardiac and pulmonary work. There is probably no good reason for trying to keep these children alert. Perhaps the most sensible method of treating coma or stupor is to take advantage of the opportunity it affords, to lavage the stomach while there is relatively little danger of causing vomiting or aspiration. Having taken advantage of the anesthetic action of kerosene to remove what part of it is left in the stomach, one might then reasonably employ simple stimulants such as caffeine, amphetamine (Benzedrine), and ephedrine. Response to caffeine may be especially valuable when it is given in conventional small amounts as a means of differentiating physiological sleep from early stupor.

The treatment of pulmonary edema is most difficult. Though the mechanism for its production is poorly understood, absorbed kerosene may play some role; we have seen pulmonary edema improve on several occasions *after* removal of kerosene from the stomach and we have seen children who developed severe respiratory distress only *after* they had fought, gagged, struggled, and undoubtedly aspirated during ill timed attempts at lavage. Whenever it is possible to do so, *without increasing dangers of aspiration* the stomach should be lavaged. The only other therapy which holds promise is the administration of oxygen, since death in pulmonary edema is due, literally, to drowning. As Drinker[11] has pointed out, pulmonary edema and alveolar capillary anoxia constitute a vicious and self perpetuating cycle. The opportunity to break this must be seized *before* or at the very first sign that fluid is accumulating in the lungs. At this time oxygen should be given in as high a concentration as possible. Ideally, oxygen under positive pressure would be desirable but as yet there is no practical method by which this can be effectively accomplished with small and uncooperative children.

Measures employing hypertonic solutions for the alleviation of pulmonary edema have not been satisfactory in our experience. Fifty per cent glucose and sucrose solutions have only transient action; four times concentrated solutions of plasma undoubtedly have a more sustained effect but, after the administration of useful amounts, sodium tolerance is often exceeded and the situation may be worse than it was before. Salt-free serum albumin is theoretically an ideal agent but we have not had sufficient experience with it yet for fair evaluation. It could hardly be expected to ameliorate existing irritant lesions or remove much of the fluid already filling smaller air passages.

Treatment of complications and delayed effects involves prophylactic use of antibiotic and chemotherapeutic agents to prevent or treat pneumonia or other respiratory infections. Additional therapeutic measures may be indicated by particular circumstances. Hyperventilation and postural drainage may be instituted for atelectasis and as prophylaxis against later bronchiectasis. Such measures are begun only after the twelve-hour danger period has passed. Late liver damage is a theoretical complication which we have not observed.

SUMMARY

The ingestion or aspiration of kerosene is a common household accident among small children. The course of resultant symptoms is extremely variable but frequently leads to death from pulmonary edema within eighteen hours.

In a preliminary way, we have reviewed only fragments of a large clinical experi-

ence and have tried to make a few rationalizations for therapy based on what is known of the composition and physiologic effects of this variable mixture of hydrocarbon compounds.

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SOMATIC SUBSTITUTIVE REACTIONS IN ADOLESCENTS

HERBERT E. HARMS, M. D.

NEW ORLEANS

More than thirty years ago Adolf Meyer[1] directed attention to the importance of treating not only the diseased organ but also the patient when he wrote, "of late years we have learned to realize that indeed some disorders can be explained, and treated, as abnormal and unhealthy ways of the person rather than as disorders of any special organ." Within recent years new terms such as "psychosomatic" have come into wide usage to cloak this old urge to consider the person as a whole. Unfortunately, this new name has not carried further meaning for many people, and the medical attack in the direction of a specific organ continues, not through lack of insight of the physician alone, but often through fault of the patient who demands that his complaint be attacked with vigor and dispatch. This puts the physician on the defensive and demands that he assume full responsibility. The well intentioned "masterful waiting" frequently gives way to active manipulation which may well become involved, confusing, and unavailing to both physician and patient. In such a situation the well meaning therapist can reach a point where iatrogenesis replaces the original difficulty, and subsequent investigations become more troublesome for the next medical examiner.

This paper will be concerned briefly with the somatic distortions which can occur i late adolescence and a few illustrative cases will be cited. Much literature has appeared regarding social and emotional adjustment of the adolescent, but a search of the medical literature fails to reveal much information concerning the somatic complaint and its meaning and management during the adolescent period. This is true in spite of the fact that medical histories all too often reveal that the first of a series of operations in the nurtured neurotic patient occurred during adolescence.

Adolescence has been defined by Webster as "the state or process of growing up from childhood to manhood or womanhood" and for practical purposes is an acceptable definition. During this growth process healthy preparation must be made, lest backsliding occur to a less mature way of reacting. During this period it becomes increasingly apparent to the youth that he must assume more and more initiative and decrease his dependence on his parents.

Between fifteen and twenty years of age he must make serious preparation for what he will do with himself both socially and economically during adulthood. There are those adolescents who welcome this new found freedom with zest and without seeming trouble, often to the consternation of the fond parent who until this time thought himself indispensable in all the youngster's decisions. If the adolescent's early nurtur-

Read at the Sixty-eighth Annual Meeting of the Louisiana State Medical Society, April 14, 1948, Monroe, La.

From the Department of Psychiatry, Tulane University School of Medicine and the Section on Psychiatry, Ochsner Clinic, New Orleans.

ing has occurred amidst family harmony, and if the parents continue to mature to senescence as normal people should, there will be little likelihood of difficulties. If, however, the maturation process between parent and child has not followed the natural plan, but instead a contagious emotional immaturity has existed, then a recrudescense of earlier unsolved conflicts can be forced to the surface to confuse the issues of adolescence itself.

If obstacles are encountered in the development toward self-assurance, inner security, and the ability for independent action, somatic distortions will surely appear. One type of distortion is the fleeting, somatic, substitutive reactions for some psychic pain. Some years ago this simple type of escape response was brought dramatically to my attention. At the time I was summoned by an astute internist to consult with him concerning two girls who had been brought to a college infirmary late one evening. One of them came in to the nurse on duty, bent over, holding her side and complaining of severe abdominal pain. The second girl came in an hour later, sobbing because of acute abdominal pain and vomiting, and asserting, "I have appendicitis." Both girls were acutely ill and had elected the appendix as the culprit. Actually, in much more time than it takes to relate, their problem was found to be an acute case of "Hellenism" for each was greatly disappointed when she failed to receive a bid to a certain sorority.

All physicians have been faced with such psychologic phenomena, and yet such an experience makes a lasting impression under such dramatic circumstances. Such cases, if recognized, are easily handled just as the "arithmetic stomach" of the little boy, who has failed to prepare his lesson, is equally easy to manage.

If, in the case just cited, we also had had to manage the families of the girls, complicating factors would automatically have been injected into the situation. The girls would not have readily admitted their problems perhaps, and the mothers might have asked embarrassing questions, such as how could the physician be sure there was nothing seriously wrong. It is easy to see how the practitioner, thrown on the defensive, could have been drawn into the child's somatic conspiracy. The next step would have been to yield to the families interference and allow a simple condition to become more protracted. There could have followed a rigid somatic vigil, repeated clinical examinations and perhaps even prophylactic elective appendectomy. In such a case the psychic retreat of the patient is apt to be cut off, and a somatic focus begun.

Although all of this is elementary enough, such incidents happen again and again. Of course, there are much more complicated cases than these, in which the psychologic problem has progressed beyond the simple conversion phenomenon, and the somatic disturbance is of longer and more deep seated significance. Often these prove most stubborn to handle and require long term treatment. A few such cases might be cited here.

CASE REPORTS

Case No. 1 An 18 year old boy reported to us with a chief complaint of frontal headache of more than a year's duration, increasing fatigue and general nervousness. In December 1945 while being examined for induction into the army he fainted. He was rejected subsequently and upon his return home his disappointed father demanded an explanation. The boy could only answer for physical reasons. There followed a number of visits to physicians to determine the cause for rejection. Unfortunately, he did have a low grade fever. The first physician decided that his tonsils should be removed. Still nervous, he was given iodine for a week but this only made him worse, and he began to notice dizzy spells and weakness. Not doing well, in March 1946 he received 50 injections of penicillin in a hospital. Following this he complained of frontal headaches, was thought to have sinusitis and was given more penicillin. In May 1946 he again ran a low grade fever and his local physician, believing he might have endocarditis, gave him more penicillin. At this point he was informed he had heart trouble and was put to bed. All of these diagnoses convinced him that there was something seriously wrong with himself. However, fortunately, at one more visit to a physician it was recognized that his difficulty was a psychiatric problem.

When we first saw him, he walked slowly, bent forward, and talked only in cautious low tones about himself. He was convinced he was seriously

ill. He was an asthenic, underweight boy, 5 feet 6 inches tall and weighing 114 pounds. There was mild hypertension. The electrocardiogram was normal except for sinus tachycardia. Urologic study revealed no abnormalities, and a urethral discharge proved to be only spermatorrhea. All laboratory studies, including hematologic, serologic, and stool examinations yielded negative results. Urine clearance tests gave normal results. Bacteriologic examination for febrile antigens including those for Brucella gave negative results. Otorhinologic examination including roentgenograms of the paranasal sinuses revealed no abnormalities and another roentgenogram revealed a normal chest.

Casual inquiry disclosed a retiring, shy boy who lived in a household filled with aggressive, high tensioned people. He made such statements as, "My mama is pretty nervous, and when I start doing something, she fusses at me. Everything has to be in its place. My brother is mean, and bothers me too." In addition to having difficulty with the mother and brother, it was eventually discovered that the boy was fearful of his father who, not understanding his retiring son, anxiously pushed him, and not getting a suitable response often became angry with him. It was also learned that his recessiveness excluded him from normal social outlets; he was fearful of girls and distrusted himself in social gatherings.

His illness was definitely part of the pattern of his retreat and unfortunately was aided by the somatic focusing by those he consulted, to the exclusion of the psychic factors. This was largely due to the uncompromising father, who had to know exactly why this son was turned down to the father's own embarrassment. This boy was seen only three times and the obvious psychologic factors in his adjustment were worked out with him. When last seen he was greatly improved but still in need of supportive psychotherapy.

Case No. 2. Miss B., a 19 year old college girl, while attending a party at the age of 15 years, fell and complained of a painful back. Three months following the fall she felt pain in the right thigh and leg. Ten months later she experienced a similar pain in the left leg. The pain in her back was of varying severity but constant from the time of the accident. It was worse in the afternoon and was aggravated by exercise. It did not interfere with sleep but she would awaken tired in the morning. Her pain was never completely incapacitating but did interfere with daily living and caused her to withdraw from groups and later from school.

Examination of the back when first seen in December 1944 gave no indication of any definite neurologic or orthopedic problem. She was followed at irregular intervals for this and other complaints (dysmenorrhea, painful breasts, and fainting attacks). There was a note in her record by a surgical consultant dated August 1945 which read, "I can't understand this girl. It looks as though she doesn't enjoy living." Two months later the same consultant wrote, "This isn't a disc syndrome; I will avoid operating on her as long as possible."

During this time the patient was also being treated by orthopedists and had been wearing a back brace which she would not discard. After seeing her five times over a period of ten months, they too considered her to be psychoneurotic. They did, however, hospitalize her for a brief period to apply extension to her limbs to correct the back pain. Following this she experienced dramatic relief and was described as having "much less hypochondriacal or neurotic tendencies."

It is not possible to set down in words the emotional atmosphere that must have pervaded the contacts between the physician, the patient, and especially the mother. The mother in this instance was an aggressive person who could never accept a functional formulation of her daughter's back pain. Because of this we lost sight of her for approximately eighteen months, and when next seen in June 1947 the girl had had a spinal fusion. The frustrated surgeon had told the aggressive mother that he could not understand why the patient was not well following the fusion and that he could offer no new help.

About two and a half years after we first saw her and approximately five years from the date of onset of her trouble, we started treating her for the functional problem. It was with difficulty that the family and particularly the mother could be convinced of the need for psychiatric care. It was obvious to us from the beginning that the girl was hysterical and from even a cursory investigation of her longitudinal history it would have been apparent to others. Headaches of a tensional type, episodes of vertigo, feelings of faintness, occasional complaint of pain over the bridge of her nose, occasional attacks of sharp pain in the lower part of the abdomen from an early age not relieved by appendectomy at eleven years of age, bouts of nausea and vomiting, and dysmenorrhea appeared prominently in the history.

The patient has now been treated over a period of ten months, for a total of eighteen interviews, during which time there has been a complete change so far as her somatizations are concerned. Her incapacitating headaches have disappeared, the backache has become a mere point of tenderness, and her menstrual cramping no longer keeps her in bed. Much discussion has centered around her interpersonal relationships, which have been all along the crux of her problem. The original accident giving rise to a painful back occurred at a party where she had been having a perfectly miserable time. There previously had been a consistent pattern of reacting with illness to trouble-

some life situations. The patient always had to compete with a younger and more attractively gregarious sister. From early school days her process of socialization had not devedoped smoothly, and she was inclined to focus her hostile feelings on such factors as her need to wear glasses to account for her self-consciousness. She was a tempestuous person, quick to criticize in order to forestall criticism of herself, and rigid and stiff in her associations. One might even surmise that her stiff back was symbolic of her entire self.

By means of distributive analysis this girl has been able to change a great deal. She is now attending college, taking vigorous extracurricular activities, and dating much more; she has plans for a career and has an entirely different outlook on life.

Case No. 3. Miss S., a 17 year old girl, consulted us after having had three fainting attacks. For the first of these she was observed in a hospital, and the physician was impressed that she was nervous and overworked (she was working her way through high school), but this inclination toward somatic thinking caused him to make a diagnosis of chronic myocarditis with myocardial ischemia at the time of discharge. One month later, she was re-admitted to the hospital in a semiconscious condition following an attack of dizziness in school. She was discharged and recovered three days later. Two weeks later a third episode occurred. It was then that some intracranial pathologic lesion was suspected, when, on this admission, she had what were regarded as intermittent episodes of loss of consciousness during a period of three days. The description of these was rather vague, but there had been lip biting, loss of sphincteric control, and other phenomena indicative of a grand mal attack. Neurologic examination and spinal fluid were normal. A pneumo-encephalogram gave negative results. Laboratory studies including an electro-encephalogram revealed no abnormalities. In addition to the fainting attacks she also complained of more or less constant but vague pains in both legs and polymenorrhea every two weeks which began at the same time as her manifest emotional illness.

It was learned that the patient was the second child of the mother's first marriage which ended in divorce while the patient was still an infant. Her father presently lives in an old soldiers' home and was always regarded as an inadequate person. A stepfather entered the family while the patient was extremely young, and a close relationship developed between them during her childhood. An older sister and the mother also paid a great deal of attention to her. Even now, the older sister is saving money so that our patient may attend a nursing school. At the age of 7 years she lost nearly a year of school because of varied illnesses, none of which were severe. Up to the age of 7 she was regarded as "tomboyish," but then she began to change and become a conscientious student. It is significant that the father repeatedly fought with the patient from the age of 8 onwards. His moralizing caused her to become withdrawn to the point of her becoming obsessed with studies. It should be emphasized that the child thought of herself as a tomboy and was closely attached to this father who later came to rebuff her.

Then, at the age of 12 she saw the torn body of a close companion, who had been crushed by a truck. Not long after this she began to experience multiple somatic aches but especially pain in her lower extremities (her friends legs were crushed) which were continuous until only recently. These were long thought of, however, as rheumatic, and she spent long periods in bed. For several months the patient had complained of insomnia, and for years she had been subject to frightening nightmares.

This patient has proved rather resistant to psychotherapy. It has been with difficulty that she has been able to develop any appreciable insight. It has been hard to communicate with her and she participates with great trouble in a therapeutic discussion. It is not uncommon for adolescents to run the gamut from conscious dishonesty to complete rejection of help from an adult; their distrust of an older person may at times preclude a successful relationship with the physician, and his frustration may sometimes bring about an unwise, impatient decision. With only suggestive measures it has been possible to eliminate some of the child's symptoms. She has given up her leg pains; her menstrual function has returned to a normal rhythm. There have been two recurrences of the "fainting" attacks but these have been treated with more awareness of the psychic component. She attends school regularly and has become more active. Ideally, of course, treatment is being directed toward developing a person more willing for normal growth rather than a regressing person. What has been accomplished is the uncovering of a psychologic growth problem and the turning aside of the somatic focussing which has gone on for so long.

All physicians interested in psychosomatic relationships have wondered what determines the selection of a specific organ to receive the impact of an unpleasant situation. In general, it may be said that in all people there are potential organ dysfunction affect equivalents. In childhood varied physical attitudes are developed and once an emotion has become associated, this physical attitude is apt to recur. After an organ has responded a number of times to an unpleasant mental experience, specific physi-

cal expression can eventually occur without the corresponding mental experience which originally initiated it. It is then that the person becomes unaware of the emotional significance of his organic response.

This was true in the three cases cited and a more indirect approach to the problem was necessary to reorient the patients. In this more time consuming approach the varied attitudinal reactions must be looked into with patient understanding and with a view to synthesizing personality assets. Further than this, the patient must be willing and eager to try to understand how he lives within himself and what growth must take place.

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DISCUSSION

Dr. C. S. Holbrook (New Orleans): The paper that Dr. Harms has presented could almost be taken as a sermon and if the general practitioner would interest himself in these problems I am sure he would get a great deal of satisfaction from his efforts. The general practitioner is the one to see these children, these young people, when the conflict is fresh and where the analysis is easy. The psychosomatic unraveling, or the unraveling of psychosomatic problems in children is very much simpler than in adults and the physician who first sees the child, the family physician, is in a position of great advantages because he understands the environment, the family problems, and he has known the child, the family and what the child has to face. So a little effort on the part of the physician will frequently prevent a well developed psychoneurotic symptom-complex in three, ten or twenty years. Then the problem becomes more difficult, especially if it has existed for ten or fifteen or twenty years, when the actual cause of the problems are so deeply covered that they frequently cannot be brought out and they have become a part of the individual and are not readily given up.

It is well understood that the family physician is an unusually busy man and often he does not have the necessary time to go into the problem that is brought to him. In that case, if a more suitable consultation period can be selected, it is better to do this than to see the child, or the young individual, and get rid of him by telling him the heart is a little out of order, there is some colon trouble, the appendix is flaring up, or something like that. It is very much better not to prescribe for the patient but to give him another appointment at which time a careful history can be taken and one can devote enough time to the understanding of the problem. There is nothing quite so important in psychotherapy as a careful physical examination. If one comes in complaining of palpitation and thinking he has heart trouble, it does not do much good to feel his pulse and tell the individual there is nothing wrong with him. People realize the need of a thorough examination. It may be too elaborate. It is a mistake to examine a patient time and time again when you feel disturbance is functional, because the patient begins then to feel there must be some question in your mind about his heart, etc., or you would not keep examining him, take skiagraphs of him, or make electrocardiograms or do other things unless you thought there was something wrong. When the physician is quite sure he is dealing with something functional it is a mistake to carry out an elaborate examination. Patients are frequently made worse by doctors' attitudes toward them and often these result from not being willing to devote sufficient time to the first interview. The first interview is decidedly the most important. Subsequent talks with the patient help to clarify things brought out in the first interview, but in most simple problems if one will give forty-five minutes or one hour to it, it can be readily cleared up and a little re-examination on the part of the physician and interpretation to the child and to the parents is frequently all that is necessary.

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CONSIDERATION OF MANAGEMENT OF CHILD WITH RHEUMATIC FEVER*

ARILD E. HANSEN, M. D., Ph. D.
GALVESTON, TEXAS

The objective of this presentation is to emphasize the importance of considering the treatment of the child afflicted with rheumatic fever in terms of management over a period of years or even decades. It is usual to pay close attention to the details of therapy during the acute attack when there are pain, fever, choreiform movements, or definite evidence of cardiac involvement; then, when the attack is subsiding and the child feels comfortable, all too often there is a tendency for the physician to be too lenient in relaxing his supervision. More and more we are becoming aware of this fact that it is fully as important to practice fastidious follow-up

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From the Department of Pediatrics, University of Texas School of Medicine, Galveston.

*Presented at New Orleans Graduate Medical Assembly, New Orleans, Louisiana, February 23, 1948.

care in the patient with rheumatic fever as it is with the patient with diabetes or syphilis. We should think of the problem in terms of the rheumatic career of the individual. To facilitate a consideration of this concept of management, a schematic representation of the course of the disease is given, the duration of which may be in terms of either weeks, months, years, or decades. The greatest single determinant of the duration is the severity of cardiac involvement. The four phases of management, regardless of the total duration, may be considered as follows:

Acute—keynote—bed rest and symptomatic therapy

Subsiding—keynote—diet and restriction of activity

Convalescent—keynote—diet and graduated physical activity

Quiescent—keynote—prevention of recrudescences.

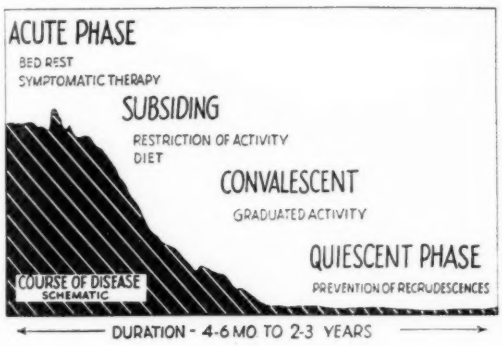

Fig. 1

Diagrammatic representation of the management of child with rheumatic fever in relation to the phase of the disease.

The shift from one phase of treatment to the other is not necessarily step-like. It may be rather sudden and abrupt, but is more apt to be smooth and gradual. One may liken the transition from one phase of the treatment to the other to the smoothness of the automatic shift in the modern car as compared with the more conventional definite shifting from low to medium and then to high gear. (To carry the simile further, reverse gear may be thought of as the acute phase of the disease.)

In the above scheme of management of rheumatic fever (Figure 1) it is presumed that the diagnosis of rheumatic fever has been established or has been strongly suspected. The most valuable bit of information, or the most important guiding feature for changing the phase of management is an evaluation of the state of the "activity of the infection". To make this evaluation one must utilize all the data obtainable from the history, physical examination, and laboratory studies. If the child has fever, tachycardia, pain, choreiform movements, enlarging heart, subcutaneous fibroid nodules, rheumatic erythema, anemia, progressive electrocardiographic abnormalities, or a developing murmur or pericardial friction rub, one need have no doubt about the activity of the infection. Conversely, following the acute attack, if the child is gaining weight, has a good appetite, good color, and vibrates vigor and enthusiasm—in other words, radiates good health, there can be little doubt that the rheumatic process is no longer active. Between these extremes it is often difficult to make an evaluation. As always in such a situation all information obtainable must be taken into consideration and interpreted in terms of the child as a whole. For example, in a child who has a normal erythrocyte sedimentation rate, a borderline hemoglobin and leukocyte count, mild anorexia, with an occasional nose bleed, and who fails to gain weight, it must be assumed there is rheumatic activity. A moderate elevation in the sedimentation rate in the asymptomatic child with a good appetite and sense of well being, especially with no evidence of carditis, indicates that he may be considered non-active. Evaluation of the state of activity of the infection in the individual child should be made at intervals of two to four weeks in the early stage and later at intervals of one to two months.

In the ensuing discussion the attempt will be made to present in outline form pertinent points regarding treatment as related to the four phases of the disease. A more

detailed consideration may be found in a current publication of the proceedings of the American Academy of Pediatrics, in the Round Table on Management of Rheumatic Fever, by Fashena and the author (Pediatrics, March, 1948).

ACUTE PHASE

Pain, fever, and other acute symptoms.

Strict bed rest—to assist in this, sedatives such as phenobarbital may be helpful.

Salicylates—sodium salicylate or acetylsalicylic acid, 0.10-0.15 gm. per kilogram (grain per pound) body weight daily in divided doses four times per day. It is important to watch closely for signs of salicylate intoxication—the first sign usually being hyperpnea from central nervous system stimulation. Acidosis may develop even before such symptoms of salicylism as tinnitus and vomiting are very marked.

Oxygen—more and more it is developing that in the presence of carditis liberal use of the oxygen tent is helpful in reducing cardiac damage.

Diet—every effort should be made to maintain good nutrition using frequent small attractively prepared meals.

General supportive measures—pleasant environment, psychological reassurance, and mild entertainment preferably with no visitors; and body comfort such as removal of weight of bed clothes from painful joints. Seldom is it necessary to employ local heat, flannel wrappings, or methyl salicylate in oil.

Chorea minor.

Bed rest—with padding of hard surfaces for protection from injury. Quiet environment.

Sedation—very satisfactory is phenobarbital, 0.032 to 0.045 gm. three to four times daily until drowsy then decrease somewhat. Innocuous rashes develop occasionally. Other sedatives may be tried.

Diet—it is important to assist in the feeding of these children, and extra efforts, though time consuming, must be made.

Fever therapy—may be used in the severe cases.

Cardiac decompensation.

Strict bed rest—with liberal use of sedatives, even employing narcotics.

Oxygen tent—continuous.

Diet—low sodium with frequent small feedings.

Diuretics—employment of theocalcin or mercuhydrin.

Digitalis—use is controversial in the cardiac failure associated with acute rheumatic disease; however, it may be tried using Eggleston dosage. Electrocardiograms should be taken to check for digitalis intoxication.

SUBSIDING PHASE

Bed rest until rheumatic activity subsides.

Nutritious diet with liberal use of iron and vitamin supplements.

Diversional therapy—mild play activity in bed and later simple occupational tasks.

Emotional and psychological conditioning.

General supportive measures with limited visitors allowed.

CONVALESCENT PHASE

Graduated physical activity—it is well to plan a positive schedule. Actually such activity begins in the subsiding phase, however, individuality is the keynote with one-half to three weeks between each step in the following schedule:

Feed self—toys in bed—holding books.

Sit up in bed—fifteen minutes, then thirty minutes, once then twice daily.

Bathroom privileges—once then twice.

Diversional therapy—quiet games and reading.

Sit in chair—fifteen minutes then thirty minutes, once then twice daily.

Meals with family—first, dinner, lunch then breakfast.

Walk about house—fifteen to thirty minutes once then twice daily.

Out of door walking—fifteen to thirty minutes once then twice daily.

Limited school work at home.

Climb stairs once then twice daily.

Rest period—one hour in morning and two hours in afternoon—later one per day.

School—one or two classes— then half

day—then all day with rest periods during and after school.

This whole activity program may be weeks to months if no carditis, or months to years if carditis is severe.

Diet—continue with good nutritional program.

Education—planned according to disability—present and prospective.

Physical therapy—play, occupational and diversional program according to ability and reaction to increase in exercise.

Psychological and emotional conditioning—it is important to assist in keeping up morale and avoid allowing "do not do that" or "don't do this," and "remember your heart" to become the chief conditioning statements. Such admonitions go far towards developing "induced invalidism" which should be rigorously avoided. An optimistic cheerful attitude must be assumed.

Environment—insofar as possible favorable hygienic conditions and pleasant surroundings should be provided. Favorable climatic conditions are of assistance. In many instances this may be provided in the patients' own home, but in some places superior convalescent homes with complete programs are available.

Removal of foci of infection—Foci in teeth, sinus, and tonsils should be investigated, and these should be treated. In the event operative procedures are to be carried out, sulfonamide or penicillin seems to be especially helpful in preventing the blood stream invasion, hence prevents the development of subacute bacterial endocarditis. It should be pointed out that removal of tonsils and adenoids is not effective in preventing subsequent attacks of acute rheumatic fever.

QUIESCENT PHASE

In general the same rules presented under Convalescent Phase are applied during this phase in regard to diet, physical activities, psychological conditioning, and educational and occupational programs. Particular emphasis is placed on the prevention of recrudescences. Measures which have been used are: Prolonged care in convalescent home, removal to a favorable climate, salicylate administration for a month when afflicted with hemolytic streptococci Group A infection of the throat; and periodic injections of tannic acid precipitated hemolytic streptococcic toxin Penicillin has not been given any more than a preliminary trial. Particularly successful has been the continuous daily administration of sulfonamides to those individuals likely to develop recurrences of rheumatic infection.

When all signs of rheumatic activity have disappeared, such drugs as sulfadiazine or sulfamerazine 0.5 gm. may be given with breakfast and supper to those over ten years of age and 0.25 gm. twice daily to those under ten years. For the first week, one-half the expected daily dose may be given. Periodic examinations of the patients should be made for the first four to six weeks at weekly intervals and later at four to six week intervals. The hemoglobin, leukocyte, and differential white cell count, and blood sulfa levels, as well as urine examinations should be made. The patient should be kept under continued surveillance. It has not been determined as to how long such a regime should be carried on. Inasmuch as 80 per cent of the recurrences develop within five years, it would seem that this should be the minimum interval. Furthermore, the likelihood of recurrences before and after 15-16 years of age are 5:1. Therefore, it would seem that children should be kept on such a prophylactic program until after puberty.

Perhaps less than 1 per cent of the children succumb during the first attack of rheumatic fever, yet in a ten to twenty year follow-up period 20 to 40 per cent will have died. As physicians responsible for maintaining a good state of health for our patients we must recognize our responsibility particularly in regard to the patient with rheumatic fever, as much can be accomplished to alleviate the devastating effects of the disease which is the number one killer of the school age child. In so doing the incapacitating effect of one of the

chief disablers of our children and youth is greatly decreased.

In spite of the fact that the burden of a prolonged responsibility in managing the rheumatic career of the child seems trying at times, the realization of the benefit to be gained serves as the finest stimulus possible to prove the effort is well expended and gives satisfaction in its accomplishment.

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ELECTROENCEPHALOGRAPHY IN CHILDHOOD

JAMES G. HUGHES, M. D.

MEMPHIS, TENNESSEE

When a highly technical procedure is first made available in any specialized field of medicine it usually requires a considerable period of time before its true worth and potentialities are disseminated to all physicians. This is eminently true of electroencephalography. In spite of the fact that the recording of electrical potentials from the human brain has been carried out for more than twenty years, most of the findings and data have been published in journals which do not come to the attention of the average physician. As a consequence, many otherwise well-posted physicians are not acquainted with technics, indications for the use of electroencephalography, and with some of the very valuable information which can be derived from it. It is the purpose of this paper to condense some of the material which pertains to the application of electroencephalography to certain problems of childhood. In general, investigations have taken the following trends:

1. Establishment of normal electroencephalographic patterns for children of various ages, ranging from the immediate newborn period through adolescence.

2. Determination of the effects of certain physiologic stimuli on the pattern of the brain waves (sleep, drowsiness, visual and other sensory stimuli, hyperventilation, hypoglycemia, etc.).

3. The study of cerebral electrical dysrhythmias which have their clinical counterparts in the various forms of epilepsy.

4. The localization of focal cortical abnormalities.

5. Attempts to correlate the pattern of the electroencephalogram with the personality of the child, especially in the case of so-called "behavior problem" children.

TECHNIC OF ELECTROENCEPHALOGRAPHY

The procedure of electroencephalography is based upon the fact that the countless cells of the cortex beat with an electric rhythm. These pulsatile potentials are part of the normal metabolism of nerve cells. While the potentials arising from individual cells are extremely minute, there is a tendency for groups of cells to beat in synchrony, so that sufficient potential is produced to permit amplification and recording in much the same way as in the electrocardiogram.

The reader who is interested in pursuing the details of the technic is referred to some of the many clearcut expositions of the method.[1-4] In general, small electrodes are attached to various positions on the scalp, good contact being assured by means of electrode paste. The electrodes are usually fastened to the clipped scalp by means of collodion, but they may be pressed against the scalp by various rubber band arrangements, or otherwise. Small wires leading from the electrodes conduct the "brain waves" to the electroencephalograph machine, where, by means of vacuum-tube amplification they are greatly magnified and recorded as fluctuating lines on moving paper by a photographic or ink-writing oscillograph.

The electroencephalograms are best obtained when the patient is in a darkened, quiet, electrically shielded cage or room, and when the subject is relaxed mentally and physically, preferably with the eyes closed. Naturally, it is more difficult to obtain the cooperation of small children, and a considerable amount of stalking is necessary in many instances. Recently, it has been proposed that sedation with pentothal sodium be used for small children in order

From the Division of Pediatrics, College of Medicine, University of Tennessee, Memphis.

to obtain electroencephalograms free from movement artefacts.[5, 6] As the electroencephalogram is being obtained, all movements of the patient must be noted on the record, for bodily movement, opening of the eyes, crying, apprehension, drowsiness, sleep, and many other factors influence the character of the tracings.

The finished record consists of a strip of paper many feet long which is then subjected to analysis. Different methods of analysis are employed, but, in general, they are based on a study of the frequency, amplitude, contour, and rhythm of the waves. The scope of this article does not permit an elaborate exposition of the normal patterns, but the references cited give the interested reader the necessary data.

Leads: Two types of "leads" are employed in electroencephalography. In the "monopolar" leads any one of the several electrodes on the scalp is connected in circuit with a "reference" electrode on the lobe of the ear, so that the electric potentials being amplified and recorded come from the cortex immediately beneath the single electrode. In the "bipolar" leads two electrodes on the scalp are connected in circuit so that the difference in the electric potentials originating from these two areas of the cortex is recorded.

While both types of leads have their value, the "bipolar" leads have special interest in regard to the localization of focal cortical abnormalities, such as scars, abnormal gyri, tumors, and abscesses. Localization of focal cortical abnormalities is achieved by what is known as "phase reversal". A simple explanation is as follows: Let A, B, C, and D represent four electrodes in a straight line across an area of the brain which has a focal cortical abnormality underlying B. When simultaneous tracings are obtained with A and B in one circuit, B and C in another, and C and D in another, a characteristic pattern will be seen. In a typical case, the tracings derived from the A-B "bipolar" lead will be a mirror image or "phase reversal" of the B-C "bipolar" lead, while the C-D "bipolar" lead will not be affected. In other words, when simultaneous "bipolar" tracings are obtained from a line of electrodes in tandem, as expressed above, the appearance of "phase reversal" indicates an abnormality underlying the electrode which is common to both of the circuits showing the "phase reversal". In the case cited above it is seen that the electrode B takes part in both the A-B and the B-C "bipolar" leads. A similar method of localization called "triangulation" is also used. It, too, is based on phase reversals, and need not be described in detail here.

Jasper[2] has published instructive diagrams and discussions dealing with localization of focal cortical abnormalities. Gibbs and Gibbs[1] have likewise given a thorough presentation of technics employed in localizing gross lesions of the cortex.

"Monopolar" leads are also useful in localizing cortical lesions. For example,[4] when a six-channel apparatus is used and the channels are equally matched to record with the same amplitude, the "monopolar" recording will demonstrate any focus of abnormal discharge. Waves of higher or lower voltage and of altered frequency will appear in one lead, or in the leads from one hemisphere. Minor degrees of asymmetry do not signify a cortical lesion. When definite differences exist, confirmation and sharper localization may be secured by recourse to the "bipolar" method.

Some of the most interesting applications of localization have to do with electroencephalograms taken directly from the exposed human brain during operation in order to aid the surgeon in detecting abnormal cortical areas.

Another interesting technic of localization employs a "basal" lead consisting of a sharply pointed wire electrode, insulated except at the tip, which is passed through the nasal meatus and thrust into the periosteum of the sphenoid bone.[2, 7] This lead is employed to record electric potentials from diencephalic regions of the brain and has been found useful in the localization of lesions in the vicinity of the third ventricle

and with certain types of petit mal epilepsy.[2]

ARTEFACTS

There are many pitfalls in obtaining satisfactory electroencephalograms. A variety of artefacts which give extraneous patterns not related to cortical activity may be encountered, and must be detected in order to avoid mistaking them for abnormal brain waves. Ogilvie[1] lists them as follows:

1. *Muscle activity.* Electric potentials given off by contracting muscles appear as extremely fast spiky waves. They appear when the subject swallows, or contracts facial muscles.

2. *Sweating.* When the subject perspires, the baseline of the tracings may rise and fall slowly.

3. *Defective application of electrode.* Poor application of ear or scalp elecrodes, drying of electrode paste under electrodes, or a defect in the electrode itself may produce artefacts in the tracings.

4. *Movement artefact.* When the subject makes movements such as shifting position, shuffling feet, or when someone walks about in the electroencephalographic cage, or rubber tubing sways, irregular high-voltage waves may appear in the tracing.

5. *Eye Blinking.* Movements of the eyelids cause rhythmically recurring single positive waves most marked in the frontal leads.

6. *Electric appliance artefacts.* The ringing of a telephone in the electroencephalographic room, or an electric fan too close to the patient may cause fast waves in the tracings.

7. *EKG artefact.* The QRS component of the electrocardiogram is occasionally superimposed on the electroencephalographic tracing. This is observed most often when the subject has hypertension, or when the tracing is taken with the subject lying on a rubber-tired litter such as is often used in hospitals.

8. *Sixty-cycle alternating current.* Sixty-cycle alternating current arising from neighboring electrical circuits in the building may be "picked up" by the electroencephalograph and show up on the tracings as extremely fast spikes.

9. *Condenser discharges.* Single sharp spikes in the tracings may occur at random from the abnormal discharge of a condenser in the amplifying unit.

From what has been said in this very brief review of the technic of electroencephalography, it is apparent that the procedure is highly specialized but that the difficulties are surmountable, and that the information to be derived can be extremely worthwhile.

NORMAL PATTERNS AT VARIOUS AGES

Of fundamental significance in the interpretation of abnormal electroencephalograms at various ages in childhood has been the establishment of normal patterns. While there has not been complete agreement as to the normal brain waves of very young infants it has been generally conceded that the electroencephalographic patterns of children differ decidedly from those of adults. The younger the child the greater the difference.

Smith[8-13] and Lindsley[14-16] have made outstanding contributions to the study of normal electroencephalograms in the various age groups of childhood. The reader is referred to their writings for greater detail, as well as to the publications of others.[1, 17-19]

Newborn Period. In the Pediatric Department of the University of Tennessee we have focused our effort on the study of the brain waves of newborn infants.[20-23] The work has taken three trends: (1) the study of the brain waves of normal fullterm newborn infants in various stages of consciousness varying from wide-awake, through drowsiness to sleep; (2) the study of the electroencephalographic patterns of newborn infants born of mothers sedated with seconal; and (3) the study of newborn infants showing clinical neurologic abnormality.

The central purpose of the work in our department has been to utilize electroencephalography in the study of certain factors in labor and delivery which influence the cerebral activity of the newborn baby. The critical episode of being born is a ma-

jor physiologic adventure, the seriousness of which is attested by the fact that deaths within the first forty-eight hours account for a very high portion of the total infant mortality. Any data which would tend to elucidate mechanisms operative in labor and delivery which have a deleterious effect on the brains of babies should prove of value in the effort to reduce neonatal mortality.

Our findings as to the electroencephalographic patterns of normal full-term newborn infants have been based on 202 electroencephalograms obtained on 138 babies ranging in age from 20 minutes to 6 days. The electroencephalograms obtained have been studied from three particular viewpoints: (1) the ages of the infants; (2) the respective leads employed; and (3) the types of sedation, analgesia, or anesthesia given to the mothers during labor and delivery. The cases have been divided into five groups: (1) infants whose mothers received no sedative, analgesic, or anesthetic drug; (2) infants whose mothers were given caudal analgesia, where it is assumed that no depressant drug reached the fetal circulation; (3) infants whose mothers received a barbiturate drug (seconal); (4) infants whose mothers were given spinal anesthesia; and (5) infants whose mothers received miscellaneous drugs not mentioned above.

All of the tracings were taken immediately after feedings, with the infant in a nurse's arms in an electrically shielded cage. More than 100 consecutive blood sugar determinations immediately after electroencephalography were normal, indicating that hypoglycemia did not influence these tracings. Likewise, blood calcium determinations were consistently normal. With the exception of 25 infants studied while awake and drowsy, all of the tracings were taken with the infants fast asleep. A run of twenty minutes was obtained.

In general, it may be said that the electroencephalograms of newborn babies are characterized by considerable irregularities of the tracings and a lack of sustained consistent rhythm such as is seen in older children and adults. From the standpoint of cortical electrical activity, the marked dysrhythmia of the tracings gives evidence of a lack of functional organization. The baby's brain waves are as immature as the baby himself.

While our findings agree in part with those of Smith,[8-13] and Lindsley[14-16] there are certain differences which need not be brought out in an article of this scope, but which are discussed in the original papers.[20-23]

Of interest is the fact that the electroencephalograms of infants born of mothers given caudal analgesia were practically identical with the tracings from infants born of mothers given no analgesia or anesthesia whatsoever. This is confirmatory evidence of the clinical observation that "caudal" babies appear to be more alert at birth.[24]

Of particular interest is the fact that in 51 electroencephalograms obtained on 20 newborn infants born of mothers given seconal sedation there was marked alteration of the normal pattern. In comparison to electroencephalographic patterns previously found to be characteristic of normal fullterm sleeping infants, the brain waves of these babies showed a striking electrical cortical depression characterized by a marked decrease in slow waves of moderate amplitude, and some increase in fast waves of low amplitude. These effects persist into the third day, although the baby may have become clinically alert.

It is apparent how this method of study could be applied to evaluating dosages of various sedative and analgesic agents given to the mother in regard to their effects on the baby's brain waves, and on his clinical behavior from the standpoint of alertness or drowsiness. Many different agents need evaluation, both in regard to total dosage administered during labor and in timing of doses prior to delivery. Extensive physiologic studies of the mother during labor and delivery need to be done in order to detect factors other than drugs which may be influencing the baby's brain waves. Such studies are under way, but have not reached the point where conclusions can be drawn.

We have been particularly interested in a group of newborn infants who have had grossly abnormal electroencephalograms which have been correlated with neurologic abnormalities. In some cases the electroencephalograms demonstrated cortical electrical abnormality before clinical symptoms and signs emerged, and electroencephalographic abnormalities persisted in some of the infants after neurologic symptoms had disappeared.

Of equal interest are a few newborn infants, detected in routine studies, who had abnormal electroencephalograms without clinically apparent abnormalities. The significance of these observations awaits prolonged follow-up and larger series of such cases.

Growth of the "Alpha" Rhythm. In the normal adult the brain waves which have probably received the most study are the so-called "alpha" waves. These waves are usually in the neighborhood of 50 microvolts amplitude and occur in frequencies which range from 8 to 13 per second. In the study of normal children of various ages the development of the "alpha rhythm" has also received considerable attention. Smith and Lindsley have both shown that in infants awake the occipital alpha rhythm usualiy first appears by the third or fourth month, at a frequency of 3 to 4 per second. Once established, the frequency of the waves increases with age, rapidly during the first year but more slowly thereafter until a relatively stabilized adult level is attained, usually sometime before the end of the twelfth year. Interestingly enough, the growth curve of alpha wave frequency and age follows essentially the same pattern as does brain weight in children. It is believed that the initial appearance of occipital alpha rhythm is associated with the initial functioning of the visual cortex, since it appears when the child begins to perceive objects and follow them across the visual field.

Other Characteristics of Brain Waves of Children. While the scope of this presentation does not permit a full account of other characteristics which differentiate electroencephalograms of children from those of adults, a few additional points deserve comment. Gibbs and Gibbs[1] state that by the ninth year the record from occipital areas looks essentially like that in an adult, but that frontal and parietal areas still show at nine years of age much slower activity than is seen in a normal adult. They state further that at nineteen years of age all normal individuals show adult types of tracing from all cortical areas.

Lindsley has shown that the normal diminution or obliteration of the alpha waves of the occipital area which occurs with visual, auditory, or tactile stimulation takes place with an increasingly shortened interval between stimulus and brain wave alteration as age advances. It is as if the brain becomes more alert and responsive as the child grows older.

Brill and Seidemann[25] have shown that the dysrhythmia which is frequently seen in spontaneous resting records of epileptics can often be produced by having the patient hyperventilate. While hyperventilation elicited dysrhythmias in 84 per cent of patients with idiopathic epilepsy, normal adults did not show dysrhythmia following hyperventilation. On the other hand, Brill and Seidemann[26] found that many normal children may develop a dysrhythmia during hyperventilation which appears identical to that seen in patients with epilepsy. They found that this was common in younger children and that as the child grew older this tendency became less frequent. They thought that this epileptic-like dysrhythmia associated with hyperventilation might be indicative of a low convulsive threshold, and was in accord with the well-recognized greater tendency for young children to develop seizures during acute illnesses.

EFFECTS OF VARIOUS STIMULI ON THE PATTERN OF BRAIN WAVES

It has been mentioned previously that reliable electroencephalograms are best obtained when the individual is in a darkened, quiet, electrically shielded room, and when the subject is mentally and physically relaxed, preferably with the eyes closed. The basis for this statement rests on the fact

that visual, auditory, and tactile stimuli tend to diminish or obliterate the normal rhythms found in the well-relaxed subject. For example, when a normal individual has his eyes closed the alpha rhythm of waves at a frequency of 8 to 13 per second and with an amplitude of approximitely 50 microvolts is suddenly changed by opening of the eyes to a much flatter type of tracing with lower amplitude and faster activity. Similarly, when the subject is in a darkened room with the eyes open, the normal alpha rhythm can be arrested suddenly by a flash of light. Auditory, tactile, and pain stimuli also effect considerable changes in the waves. Gustatory stimuli also influence the tracings.

Answering questions involving mental effort blocks the alpha rhythm and otherwise modifies the electroencephalogram.

Fright, fear, anxiety, apprehension, and embarrassment may influence the tracings. Jost[27] and Sherman and Jost[28] studied the influence of frustration on the electroencephalogram and found that it produced alterations in the tracings which were more noticeable in unstable individuals.

Various other applications of electroencephalography to psychologic states have been made. In brief, they all tend to show that anything which upsets the even tenor of the way also alters the brain waves.

The effects of a reduction in oxygen saturation on the electroencephalogram have also been studied. It is generally conceded that no great changes are produced until unconsciousness occurs, and then so-called delta waves predominate.

Several investigators have shown that reduction of the blood sugar level below a critical limit will produce coma and unconsciousness, but before this state is reached there is a slowing of the alpha rhythm and certain other changes in the electroencephalogram. High blood sugar levels tend to produce higher frequencies of the brain waves.

The electrical activity of the cortex speeds up with acidosis and slows down with alkalosis. Fever increases the frequency of the alpha waves, probably by increasing the metabolic activity of the nerve cells. Artificial elevation of metabolism by means of thyroid extract increases the frequency of alpha waves. Space does not permit a consideration of the effects on the electroencephalogram of the many drugs which have been studied.

From what has been said concerning the effects of certain psychologic states and stimuli on the electroencephalogram, it is clear that cortical electrical activity is extremely sensitive to a wide variety of influences. This is not surprising, in view of the fact that all our environmental contacts have some effect on our central nervous system. The importance of having some idea of the multiplicity of factors which may influence brain waves lies in the fact that they must be taken into consideration in making and interpreting tracings.

ELECTROENCEPHALOGRAPHY IN EPILEPSY

Probably the most generally known fact about electroencephalography is that it is extremely useful in the diagnosis of epilepsy. In epileptic seizures of all sorts there is a paroxysmal cerebral dysrhythmia which often gives characteristic patterns in the electroencephalogram.

Persons with epilepsy have abnormal electrencephalograms not only during seizures but also between attacks, so that tracings facilitate diagnosis in a seizure-free state as well as during an attack. The fact that hyperventilation tends to elicit abnormal brain waves in epileptic individuals has already been discussed.

There is no point in giving here the details of the differences in classification of the brain waves of epileptics. Suffice it to say that two chief schools of thought exist: that of Gibbs and Gibbs[1] and that of Jasper.[2]

The Gibbs classification, although recognizing additional variations, gives four general types of seizure patterns: (1) grand mal attacks are associated with a burst of increasingly fast waves of higher and higher amplitude in the tonic phase which changes to slower waves as the clonic phase begins; (2) petit mal attacks are characterized by a "spike-and-dome" or "spike-and-

wave" complex occurring usually at a rate of three per second; (3) petit mal variant attacks have the spike-and-dome, but it occurs at a rate of about two per second; (4) psychomotor or psychic equivalent attacks, consisting of apparently conscious acts of impulsive, uncontrolled character, are accompanied by high square-topped waves occurring at a rate of three to six per second. Jasper has emphasized two abnormal features of the electroencephalograms of epileptics: (1) hypersynchrony, or abnormal voltage, and (2) dysrhythmia, or abnormal frequency. According to this classification, localization or distribution of the disturbance provides the most satisfactory basis for classifying the electroencephalograms of epileptics. Three principal types of disturbance are described: (1) localized unilateral, (2) bilaterally synchronized, and (3) diffuse. Jasper also classifies tracings as to whether disturbances occur as random findings or in paroxysmal rhythmic sequences. Stress is also laid on the forms of the waves and their frequencies.

A tremendous amount of work has been done on electroencephalography in epilepsy. Not only have these efforts been directed at finding patterns characteristic of various clinical types, but many investigations have been made to determine the underlying faulty mechanisms which give rise to seizures. Localization of the focus in the cortex from which the paroxysmal dysrhythmia originates has received special attention, for surgical excision of such a focus has been carried out many times with brilliant success. Excision does not always cure, however. Furthermore, not all cases of epilepsy have localizable foci, since many cases appear to be due to diffuse disturbances, and some of subcortical defects, possibly to defective thalamic control of the cortex.

The electroencephalogram has also been useful in following the course of patients given anticonvulsant drugs. The character of the tracing gives evidence of the effectiveness of the medication in controlling cerebral dysrhythmia. Furthermore, since electroencephalograms may detect certain brain wave patterns characteristic of epilepsy in the absence of clinical attacks, it is possible to give medication to prevent seizures in persons who would otherwise not have the benefit of such therapy.

One of the most interesting applications of electroencephalography in the field of epilepsy has been in establishing the fact that close relatives of patients with idiopathic epilepsy often have cerebral dysrhythmia without clinical attacks. This evidence corroborates a hereditary background for certain cases of epilepsy.

LOCALIZATION OF FOCAL CORTICAL ABNORMALITIES

The electroencephalogram is of great usefulness in localization of gross lesions of the brain which are either in the cortex or close enough to the surface to interfere with function of the cortex. "Monopolar" or "bipolar" leads may be employed, as has been discussed in the brief description of the technic of electroencephalography.

In patients with epilepsy, the electroencephalogram is of definite value in selecting cases which are due to focal cortical abnormality and in helping to localize for the surgeon the area in which cerebral dysrhythmia originates. In localization of such focal areas, electroencephalography is only one of several steps taken to find the site of the lesion. The other procedures employed are a detailed history of the patient and the pattern of his seizure, careful neurological examination, and pneumoencephalography. It should be stressed that modern approach to convulsive disorders involves a careful search for a focal lesion, in the hope that it may be of a type that can be removed. Excellent results have followed removal of scars, abnormal gyri, and other lesions. However, it is important to realize that excision of the focus does not invariably result in permanent cure, for some of the cases have a return of seizures and of abnormal brain waves from the area adjacent to that operated upon. All patients thought to have epilepsy should have detailed studies including electroencephalography, for it is a great tragedy to con-

tinue indefinitely with medical management alone in those cases where surgical excision may offer so much.

Other brain lesions may also be localized by electroencephalography if they are in the cortex or interfere with its function. Such lesions include tumors or abscesses of the brain, subdural and epidural hemorrhage, areas of trauma, and other less common conditions. Here, again, electroencephalography has a dual role of proving the presence of cerebral abnormality and helping to localize it. Obviously, the exact nature of the lesion cannot be determined by the procedure.

RELATIONSHIP OF THE ELECTROENCEPHALOGRAM TO PERSONALITY

Some of the most interesting electroencephalographic data have to do with the relationship of the pattern of the brain waves to various types of psychiatric and psychologic disorders. Lindsley[3] has summarized the information from a wide variety of sources. He states that although numerous studies have been made of psychiatric disorders, especially the classical psychoses, no distinctive abnormality of the electroencephalogram has been found which could be said to be pathognomonic of a particular type of disorder.

Of special interest in the field of pediatrics is the work with behavior problem children. In brief, a number of investigators have found disturbances of cortical function, as expressed in abnormal electroencephalograms, in 70 to 90 per cent of the cases. Brill[29] has reviewed the subject.

Jasper, Solomon and Bradley[30] studied 71 children between the ages of 2 and 16 years, admitted to the Emma Pendleton Bradley Home with a primary diagnosis of behavior problem. Half of these children had a history or physical signs of nervous system involvement, while half did not. Forty-two of these 71 children, or 59 per cent of the entire group, had abnormal electroencephalograms. Of the children with a history of nervous system disease or defect, 74 per cent showed abnormal electroencephalograms. Of great interest was the fact that the group with the normal electroencephalograms responded much better to treatment and guidance, while those with especially abnormal electroencephalograms were particularly refractory. Jasper and his coworkers concluded that abnormal brain function, as revealed by the electroencephalogram, was an important etiologic component in the majority of a group of behavior problem children whose disorder had previously been considered primarily psychogenic.

Cutts and Jasper[31] studied the effects of benzedrine sulfate and phenobarbital on 12 problem children with abnormal electroencephalograms. Benzedrine did not appear to influence the brain waves, but clinical improvement occurred with benzedrine medication in 7 of the 12 cases. Phenobarbital made some of the electrograms more abnormal and improved others. It seemed to cause exacerbation of clinical symptoms in the majority of the children.

Strauss, Rahm and Barrera[32] found that 68 per cent of 44 children with severe behavior problems had abnormal electroencephalograms.

Lindsley and Cutts[33] demonstrated that the electroencephalograms of behavior children differed significantly from those of normal children. Interestingly enough, they found the behavior problem group unusually sensitive to hyperventilation as expressed in outbursts of high amplitude 3 per second waves. Three things which differentiated the behavior problem group from the normal group were that the former had a greater incidence of 2 to 5 per second waves, 5 to 8 per second waves, and showed a greater tendency to the "hyperventilation" effect.

Brill, Seidemann, Montague, and Balser[34] found abnormal electroencephalograms in 61 per cent of a group of 28 behavior problem children. The percentage of abnormal tracings was much higher in the children with organic brain disease or epilepsy, or neurotic or psychotic manifestation.

It is well to remember that all of the studies cited have dealt with serious types of behavior abnormalities which lead children to juvenile courts, children's institu-

tions, and to other agencies which deal with such protracted problems of child behavior. There is no evidence that most simple, common behavior problems which are so much a part of every child's life are based on any cortical abnormalities.

One may readily see the importance and the implications of the studies which have been mentioned. It is necessary to reorientate ourselves toward children with serious behavior disorders. In spite of the importance which must always be attached to general health, environment, and psychogenic factors, it becomes necessary to realize that behavior problems may have serious underlying organic causes. It is an injustice to the child and to his parents to assume in every case of serious proportions that there has been faulty management. What goes on in the child's brain may be more important than what goes on in his environment.

SUMMARY AND CONCLUSIONS

Electroencephalography has had wide application in the field of pediatrics. Five special fields of interest have been: (1) establishment of normal patterns for various age groups; (2) determination of the effects on brain waves of various stimuli and psychologic states; (3) study of cerebral electrical dysrhythmias associated with epilepsy; (4) localization of focal cortical abnormalities; and (5) relationship of electroencephalographic pattern to personality, with special reference to studies in a number of serious behavior problems.

Electroencephalography is one of the major procedures in establishing a diagnosis of epilepsy; it not only aids in determining type of cerebral dysrhythmia, but also differentiates localized cortical abnormalities from generalized defects, and thereby paves the way for possible surgical removal. No epileptic patient should be treated by medical management alone without first exploring the possibility that there is a sharply localized epileptogenic focus susceptible to excision. Surgery does not invariably cure, but brilliant results have been achieved in many instances. Other types of cerebral lesions, such as tumors, abscesses, subdural and epidural hemorrhage, and areas of trauma may be localized by the procedure.

Of great significance is the fact that many children with serious, protracted behavior disturbances have abnormal electroencephalograms.

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POSTGRADUATE EDUCATION IN PEDIATRICS FOR GENERAL PRACTITIONERS

SIDNEY S. CHIPMAN, M. D.*

NEW ORLEANS

Postgraduate medical education is used in this discussion as a term to describe any type of systematic supervised educational activity, formal or informal, that helps the physician to keep abreast of developments in his own field or fields of practice. To be noted especially is the latter portion of this definition, which emphasizes the function of postgraduate education as instruction aimed at keeping a physician up-to-date in his own field and not at training for a specialty.

New knowledge and developments in medicine occur so rapidly that if a physician is to remain well informed and professionally competent he must seek and take advantage of all possible educational opportunities. All too frequently the busy rural practitioner's only opportunity to learn of new developments is a few hurried minutes with the detail men from the pharmaceutical houses or a very hasty glance at the literature left in the office by these individuals. These pamphlets usually describe in glowing terms the almost certain brilliant results which must follow the use of a new drug, and neglect, intentionally or otherwise, to mention failures or dangers inherent in its use.

The distribution of physicians, as purveyors of medical services, has been a subject of considerable study and discussion in recent years. The current agitation and trend towards radical changes in medical practice probably stem from the fact that medical service is inadequate both in distribution and quality.

The American Academy of Pediatrics has conducted a comprehensive survey of many phases of the medical care of children in the United States. The results of this survey have been published and are available for general study and use.* From this and other surveys, certain general statements can be made regarding medical care received by the children in our country.

1. Seventy-five per cent of the medical care of the children in the U. S. A. is provided by general practitioners.

2. Forty-six per cent of general practitioners have minimal or no hospital training in pediatrics.

3. There is tremendous variation in the amount of medical care rendered to children in various parts of the country.

4. Children in rural areas receive less care, due to the shortage of well trained physicians in these areas.

The results of the Academy study give concrete evidence of the unequal distribu-

Read before the Pediatric Section of the Louisiana State Medical Society at the Sixty-eighth annual meeting, Monroe, La., April 14, 1948.

*From the Department of Pediatrics, Louisiana State University School of Medicine and the Section of Maternal and Child Health, Louisiana State Department of Health.

*See current reports in this journal. (Ed.)

tion of medical care of children. However, they supply much less information concerning the quality of medical care. It is with the improvement of quality of care that postgraduate education is concerned. It is highly unlikely that the number of pediatricians will be so greatly increased that they will render more than a small proportion of the total care of children. Thus the family practitioner probably will remain as the largest dispenser of medical care of children and it is primarily with this group that we are concerned.

Postgraduate medical education was started in a small way in this country in the latter part of the last century. Initially it was the idea and responsibility of organized medicine only but since that time medical schools and state departments of health have recognized the need and have assumed active responsibilty in program planning. Michigan, Minnesota, Pennsylvania, North Carolina, and Tennessee early established formal programs. During the past twenty years some type of organized program has been established in nearly all regions of the country. Inevitably this development has resulted in a wide variety, both in the scope and type of program. Michigan has developed intramural three to six day programs and extramural courses of one day a week for eight weeks. Minnesota has concentrated its efforts in continuation study on the university campus. Tennessee, North Carolina, and Oklahoma have developed the "circuit" type of instruction in which an instructor or group of instructors makes a fairly complete coverage of at least the rural areas. Texas and other states have emphasized postgraduate medical assemblies. Maryland has relied on personal visits with physicians and a limited number of organized meetings. Undoubtedly, programs should vary with local conditions.

In general, extramural courses, or the carrying of the program to the physicians, have been more satisfactory than intramural courses. Clinics and round table discussions are more valuable than didactic lectures. All programs must have two objectives, namely, refresher work in subjects previously studied in medical school or hospital, and dissemination of information concerning newer knowledge and technics. Intelligent planning and above all vigorous active support and participation of the physicians are essential to success. This second requirement is by all odds the most difficult.

Postgraduate education in Louisiana has not been developed to a degree which we could consider adequate. Intramural courses have been established and conducted successfully at Tulane. Extramural teaching has been entirely ignored save for two three day sessions conducted by Louisiana State University a few years ago. Within the past year Louisiana State University with the financial support of the Louisiana State Department of Health has added to its pediatric staff a member whose major responsibility is the establishment of a program or programs directed at continuing the education of the family physicians of Louisiana. A similar effort has been initiated in Mississippi by Tulane and the Mississippi State Department of Health. It is our pediatric effort in Louisiana that I wish to discuss further.

During a brief survey of the state last July and August an effort was made to estimate the location of the greatest need for further pediatric education. It was also felt desirable to present such a trial program in an area in which the most active support of physicians could be relied upon. After considering local need, local interest and available time and personnel we felt that the pediatric department at Louisiana State University should try the following programs during this academic year:

1. A series of three conferences to be held in the Fifth Congressional District. It was planned that a team consisting of three members of the faculty of the medical school should spend four days in November, January and March in selected key towns of this district. During each visit, under the auspices of the regional or parish medical society, evening meetings would be held in the four towns selected. Afternoons

would be devoted to informal discussion and office consultations. The subjects chosen were (1) diseases of the respiratory tract, (2) diseases of the gastro-intestinal tract and (3) contagious diseases and immunizations. The location of this district and its subdivisions is shown on the accompanying map. The numerical response of the physicians to this program is shown in tables I and II.

TABLE I

CONFERENCES IN PEDIATRICS
FIFTH CONGRESSIONAL DISTRICT 1947-48
ATTENDANCE OF PHYSICIANS

Location of Meeting	Physicians in Area	Average Number of Physicians Attending
Tallulah	24	6
Bastrop	11	10
Ruston	43	17
Monroe	124	38
Total	202	71 (35%)

TABLE II

	Location	Physicians In Area	Attendance Nov.	Jan.	Mar.
	East Carroll	5	....	1	....
	West Carroll	7	....	1	....
Tallulah	—Madison	8	5	5	4
	Tensas	4	1	2	1
	Total	24	6	9	5
Bastrop	—Morehouse	11	14	10	7
	Union	12	1	....	....
Ruston	—Lincoln	20	16	15	12
	Jackson	11	2	2	2
	Total	43	19	17	14
Monroe	—Ouachita	77	33	35	38
	Caldwell	5	1	1	1
	Richland	16	1	1	1
	Franklin	16	....	1	....
	Concordia	6	....	....	....
	Catahoula	4	....	....	....
	Total	124	35	38	40

The average attendance of physicians at these conferences represented 35 per cent of all available physicians in the district. It is evident also (table II) that we were successful in attracting chiefly those physicians located in the parish in which the meeting was held and that we failed in obtaining a good turn-out from the area as a whole. Thus some other method must be devised to reach physicians in the most sparsely populated areas.

2. A more complete refresher course in

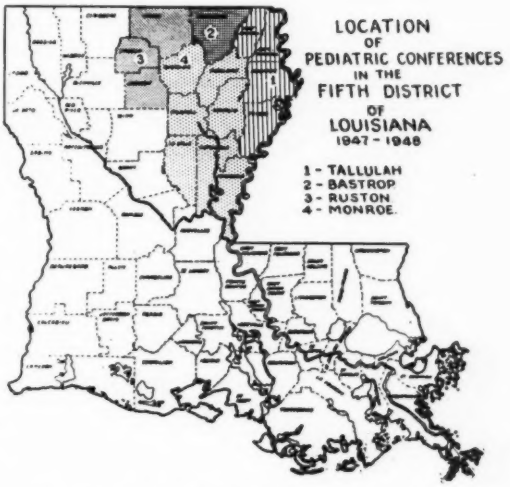

Fig. 1: Location of pediatric conferences in the Fifth District of Louisiana 1947-1948.

pediatrics to be presented to the physicians of Tangipahoa parish. A program embracing ten important phases of pediatrics and totaling some 20-25 hours is under way. Individuals well versed in particular subjects, and associated with other departments of the Medical School, assisted with portions of this program. However, the director was present and in charge of all these meetings. The program and the attendance figures for the first half of the course are shown below. This phase of our trial program has been very well received. Interest and discussion have remained at a high level.

PEDIATRIC REFRESHER COURSE
(25 Hours)
TANGIPAHOA PARISH MEDICAL SOCIETY
January - May, 1948

January	8	Croup and other Diseases of the Respiratory Tract
January	29	Care of the Premature Infant
February	12	Diarrhea in Infancy and Childhood
February	26	Helminthiasis
March	11	Uses of the Sulfonamides, Penicillin and Streptomycin Demonstration of Use of Scalp Veins in Intravenous Therapy
March	25	Common Contagious Diseases Immunizations
April	8	Rickets and Scurvy Other Deficiency Diseases
April	22	Role of Nutrition in Pregnancy Infant Feeding

May 13 Surgical Diseases in Infancy and Childhood
May 27 Tuberculosis in Infancy
Tuberculosis in Adolescents
Attendance (first half)
Physicians registered in parish—29
Average attendance per session—15 (50%)

3. A five day intramural refresher course in pediatrics was conducted at the University in April 1948 with registration limited to 30 family practitioners from less densely populated areas of the state. Judging from the comments of the physicians in attendance and those participating in the program it was most successful. We feel that a program of five days' duration is the optimum to attract and maintain the interest of these busy practitioners. The geographical distribution of the physicians attending this course is shown on the accompanying map. It is perhaps worthy of comment that approximately twice as many applications were received as could be accepted.

MAP of LOUISIANA
GEOGRAPHICAL DISTRIBUTION OF PHYSICIANS ATTENDING INTRAMURAL REFRESHER COURSE IN PEDIATRICS
April 5-9, 1948
ATTENDANCE 30
DISTRIBUTION 24 PARISHES

Fig. 2: Geographical distribution of physicians attending intramural refresher course in pediatrics.
April 5-9, 1948
Distribution 24 parishes
Attendance 30

It is realized that only a very small proportion of the general practitioners of the state have been reached this year but a certain amount of valuable experience has been gained. Many problems have been presented and probably some will plague us always. We have no delusions that these types of programs are necessarily most suited to this state. More comprehensive concentrated extramural courses, embracing round table discussions and clinical teaching, would certainly be more desirable but to date it has seemed impossible to arrange them. Lack of interest and vigorous support on the part of some physicians remains a serious problem.

It will always be difficult to estimate the success of any program. Too much emphasis should not be placed solely on the number of physicians in attendance, but rather on whether or not we have succeeded in:

A. Making physicians conscious of the breadth and rapidity of medical advances and increasing their desire to keep abreast of these changes.

B. Stimulating physicians to use sound new methods and technics in the study and care of their patients.

C. Helping physicians to realize that an improved quality of service to their patients brings to the physician an increased measure of personal satisfaction.

D. Developing a sense of critical evaluation of methods or results of a particular type of therapy.

In conclusion, I think it is fair to say that a continuation or postgraduate program is the direct responsibility of the Medical School and the State Department of Health, that the type and content of such a program must vary with local conditions, and that to date our trial effort in Louisiana has been encouraging.

ADVANTAGES OF EARLY RECOGNITION AND TREATMENT OF ALLERGIC DISORDERS IN INFANCY AND CHILDHOOD*

W. AMBROSE McGEE, M. D.
RICHMOND, VIRGINIA

A decade or two ago it was uncommon to hear papers on allergic problems of childhood. The situation has now changed. Many pediatricians who were most skeptical of allergy have now been convinced of

*Read before the Sixty-eighth Annual Meeting of the Louisiana State Medical Society, Monroe, April 14, 1948.

its frequency and importance. No phase of allergy gives more gratifying results when properly managed, than that occurring in children.

Immunization or prevention constitutes a large part of pediatric practice. The axiom "An ounce of prevention is worth a pound of cure" is certainly applicable in allergic problems of childhood. The sooner they are recognized and proper therapy instituted, the better the results.

The pathology of pediatric allergy is different from that of adults in that it is frequently reversible among children, whereas in adults such is not the case. An additional important factor in the care of children with allergic problems is their great cooperation.

Our first problem in caring for pediatric allergic disorders is their early recognition. We, as pediatricians, see incipient allergy or allergic-like trends before they are in full-bloom, and often long before they are referred to allergists, who unfortunately are almost entirely internists and not pediatricians.

The earliest allergic-like signal, I believe, and have so reported, is fetal hiccoughs.[1] While it is far from common, I do not feel that it is rare.[2] There is a hiccough-like spasm in the abdomen of the pregnant mother which can be felt and heard by auscultation, and yet the mother is not hiccoughing. The sound is in no way easily confused with uterine soufflé, fetal movements, or heartbeats. It occurs in the latter half of pregnancy at irregular times, appearing every few seconds for a period of minutes. Among 21 cases reported by me in 1942 it was possible to reproduce the hiccoughs more or less at will, in 5 cases, by repeatedly giving to the mother the same offending food.

After birth, those babies were generally very difficult feeders, half of the number being unable to tolerate any type of milk, plain or modified. By ten years of age all were suffering from some form of easily recognized clinical allergy.

Mothers in whom this phenomenon occurs should probably avoid food cravings and all foods, including milk, to which they are previously known to be clinically sensitive, as allergic symptoms during pregnancy may either abate or flare up. Where milk is prohibited, calcium should of course be added to the mother's diet.

Fetal hiccoughs suggest active sensitization similar to the Rh antigen-antibody reaction. The obstetrician should carefully search for offending foods in the mother's diet and should suggest to the pediatrician the possibility that the baby will be a difficult feeder or allergic.

The boiling of milk for infants' formulas has done much to lessen milk sensitivity, as heat denatures lactalbumin, the main offending protein. In spite of this, we see far too many infants with untoward symptoms who are getting nothing but milk.[3] Those children are, in the main, markedly sensitive to the lactalbumin or casein of the milk. The symptoms suggestive of such are recurrent or persistent vomiting, diarrhea, constipation, abdominal pain or colic, nasal blockage or discharge, rattling sounds in the throat, croup, papular or eczematous skin rashes, perianal irritation and mucus in stools. Persistence of such deleterious signs or symptoms in spite of proper mechanics of nursing, adequate formulas, change of sugar, etc., should suggest a change to another modified milk formula. If there is no improvement, substitution of another animal's milk, such as goat's milk, is in order as the lactalbumin is different in all animal milks. In a few days, if there is still no improvement, we are probably dealing with clinical casein sensitivity, as the casein is alike in all animals' milk. Next, a vegetable milk, as Mull-Soy, is indicated and, if such is of no value, an amino-acid-type of formula should be tried. In a few cases nothing seems to work to advantage, and we either have to alternate between the least offending formulas or try at an early age to feed strained meats as the main source of protein, and use other solid foods to balance the diet.

In rare instances breast milk may disagree. Here, however, the disturbances, resulting from breast milk are possibly

due to sensitivity to some specific food the mother ingests, rather than breast milk *per se*. Even minute amounts in the mother's milk will produce symptoms when a particular food is consumed by the mother.

Too early introduction of vitamins and food may cause untoward symptoms. A larger factor is the more or less routine use of multiple vitamins and foods. If reactions do occur, it is impossible to know which substance offends, whereas in single vitamins or foods detection is easier.

When first giving a new food substance, if we wait first for five days before giving it a second time, we can generally discover those foods which disagree.[4] Food dislikes and disagreements do not always parallel each other. Foods *persistently* disliked had best be avoided for three to six months. Those which disagree should be withheld for another two or three months, as tolerance develops rapidly in infants and young children.

Immunological measures begun early in life give rise to less discomfort and reduce the subsequent need for serums, such as tetanus antitoxin.

Allergic-like symptoms beginning in infancy usually subside or become latent from six to eighteen months. Then others recur around three or four years of age but often in a different form. For instance, colic of early infancy often "returns" as recurrent head colds or sinus disease; croup often as bronchitis or asthma; eczema as asthma; recurrent vomiting or digestive upsets as abdominal pain, headaches or colitis. In addition, young children will often become rebellious or antisocial or non-cooperative when a latent previous allergy has become manifest. If such personality changes continue uncorrected, the child may become a candidate for psychiatric care.

The development of allergic symptoms after a year or so of age usually necessitates laboratory aids and skin tests for diagnosis and care of the allergic disorder. A detailed history is necessary in addition to the routine pediatric one. Physical examination, x-rays, blood counts, urinalysis, and nasal smears may also prove to be of value.

The chronic or recurrent signs or symptoms highly suggestive of allergy are as follows:

In the respiratory tract: Frequent "colds", sneezing, coughing, wheezing, croup, nasal itching or blockage, sniffling, clearing of the throat, twitching of nostrils, unilateral atelectasis and sinus infection.

In the gastro-intestinal tract: Repeated attacks of "colic", vomiting, belching, hiccoughs, "bilious spells", abdominal pain, car sickness, excessive crying or discomfort, constipation, multiple stools, mucus in stools, irritable colon or colitis.

In skin and mucous membrane: Eczema, "hives", angioneurotic edema, discolorations beneath eyes, pallor of lips, cold sweats, fever blisters, oral ulcers, itching with or without a rash, swelling beneath outer portion of lower eyelids, and anal excoriations.

In the neurological system: Repeated headaches, unexplained fatigue, excessive irritability, shortening of span of attention, dizziness, restlessness during sleep, frequent drowsiness, rarely convulsions and epileptiform seizures.

A definite history of allergic disorders in the family enhances the likelihood of such a diagnosis for the child under consideration. The more allergic the parents, the sooner allergic symptoms are apt to appear in the child.

Physical findings suggestive of underlying allergy are wheezing, sneezing, nasal rubbing or sniffling or hawking, urticaria or constant itching of any part of the body, cobblestone-like swellings in the eyelids or pharynx, hacking cough, pale and boggy turbinates, pallor of lips with circumoral sweating, subocular pinkish or purplish discoloration, prominent nose due to lack of proper development of the sinuses in early life, irritability, shortening of span of attention.

Unfortunately, children are too often subjected to the removal of tonsils and adenoids for recurrent colds or bronchitis and not for infection of tonsils or adenoids *per se*. Such procedure is devoid of success.

When, however, removal of the tonsils and adenoids is indicated in an allergic child, that operation had best be undertaken in the season when pollens are not prevalent. Such a time reduces the danger of a pollen hay fever or asthma which not infrequently follows within a year or two.

In order to carry out an adequate number of skin tests, it is necessary to have a child make many office visits and subject him to much punishment. Such a procedure often terrorizes any child and demoralizes him for months or years. To prevent such an unfortunate ordeal, the passive transfer method, or "testing by proxy", offers the ideal solution for children under seven or eight years of age.[5] The ultimate information obtained is as valuable as that secured from both direct scratch and intracutaneous tests. For those having eczema, skin rashes, recurrent urticaria, or angioneurotic edema and dermographia, the indirect method is the better one, as the skin in these conditions is unsuited for proper testing. It must be remembered that the history reveals sensitivity, whereas positive skin tests suggest past, present, or future clues.

The indirect method of testing makes an adequate allergic study available in any remote area and saves the expenses of the child and mother incurred in traveling to some distant point and spending many days there being tested. The local physician simply sends the defibrinated sterile blood serum by ordinary mail to the allergist doing the study for him. Of course, the blood must be from a Wassermann negative child. The referring physician, of course, sends to the allergist a summary of the child's history, physical examination, laboratory findings and clinical course. Final detailed directions are then forwarded to the physician caring for the allergic child. An antigen, if indicated, is sent with specific directions as to dosage.

At the end of six to twelve months, previously forbidden foods are carefully reintroduced at intervals of five days. When symptoms or signs occur within these five days, that food is avoided again for six more months before another trial. If no symptoms result after the first retrial, it is wise to allow that food one or twice per week. Then after four months, if still free of untoward symptoms, more frequent use may be tried.

Where food is restricted, care must be taken to furnish sufficient calories, minerals and non-offending sources of vitamins.

Antigens are given every three or four days until the tolerance dose is found; then the interval between injections is gradually increased until a three-week schedule is reached. This three-week schedule is maintained for about eight times; then it is usually possible to stop the antigen except when pollens are real factors. In such instances, the injections are speeded up to once per week during the pollen season and once every three weeks between pollen seasons for at least three successful, successive years. During pollen seasons one must also avoid the main offending foods and include in the antigen inhalant extracts, in addition to the pollen extracts.

Antigens are of great value in respiratory types of allergy, but in mixed types of respiratory and skin allergy they will often cause exacerbation of skin lesions. Where both types of allergy exist, it is perhaps wise to maintain only dietary restrictions and avoidance of inhalants as much as possible for a period of one to twelve months before using an antigen.

SUMMARY

Allergic symptoms begin early in life. Proper adherence to a rigid plan for introducing simple foods is informative and valuable. Recognition of symptoms suggestive of allergy will do much to delay the onset of more definite allergy and may prevent much distress. Skin tests play a big part in furnishing clues with which to work. The indirect method of skin testing is as valuable as the direct one, causes no deleterious effects on the young child's morale, and makes it possible for any child —even in a remote town—to have the advantage of adequate allergic study. The

earlier such a study is undertaken, the better the results are apt to be.

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CORROSIVE ESOPHAGITIS IN CHILDREN

R. V. PLATOU, M. D.

AND

G. J. AUSTIN, M. D.*

NEW ORLEANS

INTRODUCTION

Excluding foreign bodies, most obstructions of the esophagus in children result from ingestion of caustic agents such as lye. All causes for esophageal obstruction encountered among children admitted to Charity Hospital at New Orleans in the period from January 1942, through December 1947, are included in Table I, prepared to compare relative incidence, average duration of hospitalization, and general results of therapy for each. The gravity of these problems hardly requires more emphasis than that furnished by the last column of this table.

From a questionnaire answered by 181 large general hospitals in the United States, Brown and Kiser[1] estimated the incidence of lye poisoning among all admissions between 1914 and 1939 to be about 14.5 per 100,000; rates were generally highest in southern states, the maximal reported for any hospital being 34.9 per 100,000 admissions. There is little or no evidence to indicate that there has been any decrease in the frequency of this accident since the Federal Caustic Act was passed in 1927, largely through the efforts of Chevalier Jackson[2]; prevention depends more certainly on education than it does on legislation. During the six-year period covered by this present report, the rate for lye poisoning at Charity Hospital was 39.1 per 100,000 admissions; that specific for children to age 12 was 169.2.

TABLE I

ESOPHAGEAL LESIONS IN INFANTS AND CHILDREN 1942 - 1947

	Number of Patients	Average Number of Hospital Days	Per Cent with Satisfactory Outcome
Foreign body	161	2.5	98.7
Corrosive esophagitis	75	131.1	44.0
Congenital atresia	8	15.5	0.0
All others	6	130.3	16.6
	250		

TABLE II

Esophageal Lesion	Days in Hospital		
	Minimum	Maximum	Average
Definite (30)	7	645	258
Probable (9)	1	404	113
Questionable (36)	4	90	30
All	1	645	131
Estimated Cost	$6.35	$4096.00	$786.00
Total Cost for 75 patients at least			$62,500.00

It has been repeatedly pointed out that corrosive esophagitis occurs almost exclusively among indigent patients. Circumstances giving small children opportunity to ingest lye almost regularly bespeak the poor educational and socioeconomic levels of society from which such "clinical material' is derived; the frequent occurrence of this tragic household accident among the patients we serve emphasizes the need for more effective educational campaigns for their protection. Expenditures necessary for the care of an average patient might go far toward the prevention of poisoning in others. Table II indicates that even children with *questionable* esophageal lesions

*From the Department of Pediatrics, Tulane University School of Medicine and the Charity Hospital of Louisiana at New Orleans.

Portions of this paper were presented as part of a symposium on esophageal obstructions at a meeting of the Orleans Parish Medical Society on June 14, 1948.

usually remain for long periods in the hospital; when one adds other medical costs to those for hospitalization alone, it becomes evident that only the very rich, the very poor, or the very well insured can afford to be careless with lye. The total cost of hospitalization for this group of 75 patients is known to be well in excess of $60,000.00. But our purpose here is to review hospital records concerning the management of these children who were admitted for suspected or proved esophageal lesions resulting from ingestion of corrosive agents.

THE PATIENTS

Ages of children in this group centered about 24 months, with a range from 10 months to 6 years; there were 41 males and 43 females, and 57 of them were negroes. All were indigents and about a third of them came from rural areas. The records indicated nothing these children had done that would justify penalizing them by the tortures of esophageal burns and strictures for the ignorance and carelessness of their parents; in only one instance was there deliberate infanticide, all the others being classed as accidental. As noted in Table III, almost a fourth of these patients were brought to the hospital within an hour, and more than half of them within a day after they were exposed to the caustic agent; more than two-thirds of those coming later had received earlier treatment elsewhere. Regardless of these intervals, final results of therapy as indicated by proportions of from 41.2 to 45.6 per cent with satisfactory outcome did not differ significantly. By the criteria to be described later, final results seemed as good for those who were admitted late, with malnutrition and fully developed strictures, as they did for those coming to the hospital so early that there was ample time for planning the best possible course of management. This should not be interpreted as valid refutation of the potential virtues of early therapy, of course, but probably means simply that full advantage of such opportunities was not taken.

TABLE III

Interval to Hospitalization	Final Result of Therapy		
	Number of Patients		
	Satisfactory	Unsatisfactory	Uncertain
< 1 hour	8	2	7
2-24 hours	13	0	16
1-30 days	5	2	5
> 30 days	7	3	7
Regardless	33	7	35
	(44%)	(9%)	

THE CORROSIVE AGENT

Twenty of these children took milky-appearing solutions of lye from attractive milk or "coke" bottles usually left conveniently near drains or washtubs; 33 of the toddlers gained access to powdered lye which they might easily have mistaken for sugar; the form of lye taken by 19 patients was unspecified; one of them drank battery acid, one gulped down a piece of dry ice, and one of them swallowed a preparation of cresol. That the form in which the corrosive agent is taken is of more than academic interest is well known;[3] lye is far more dangerous in solution than it is in powdered form—the latter seems to stick to the oral mucosae and is less apt to be swallowed. Judging by the data of Table IV, a significantly larger proportion of definite esophageal lesions follow exposure to solutions of lye, and end-results of therapy seem far worse than for those who took powder. Less than a fifth of those who took powdered forms, but more than half of those who took solutions eventually came to gastrostomy. From such prognostic considerations, the importance of learning the form of lye taken should be obvious. By comparing results after powders or solutions to those following exposure to unspecified forms of lye, one judges that most of the latter were probably liquid also. There was no doubt that each of 72 children were exposed to lye in some form, and the nature of other corrosive agents was definitely stated for the remaining three.

ESOPHAGEAL LESIONS

All of the 75 children had ulcerations or scars of the oral mucosae, if not already established esophageal lesions; we considered that there was ample justification for

TABLE IV

Esophageal Lesion	Form of Lye			
	Dry (33)	Solution (20)	Unspecified (19)	Other (3)
Definite	5 (15%)	11 (55%)	13	1
Probable	4	2	3	0
Questionable	24	7	3	2
Result of Therapy				
Satisfactory	16	9	6	2
Unsatisfactory	0	3 (15%)	4 (21%)	0
Uncertain	17	8	9	1

at least suspecting the presence of corrosive esophagitis in each case. The problem then became one of establishing—by real evidences of recurrent or continuous dysphagia, by obstruction to the passage of bougies, by esophagrams, or by direct esophagoscopy — which ones really had esophagitis or stricture. Judging from information available in the voluminous records of these 75 patients, the quality of initial diagnoses left much to be desired; we have summarized all the data as to the presence of esophageal lesions in Table V. One notes several rather striking shortcomings: (a) There was a remarkable paucity of pertinent objective information as to the presence of esophageal lesions during the early period, which we have empirically drawn at two weeks from the time of exposure to the corrosive agent; it is generally appreciated that real symptoms of stricture rarely develop in this interval and that the presence of esophageal lesions can only be established at this time by careful direct study. After the first two or three days, when it is difficult to distinguish true dysphagia from refusal to take food or fluid across the burned mouth or pharnyx, there is usually an interval of two or three weeks before definite obstruction to swallowing occurs. It is during this interval that repeated esophagrams and careful esophagoscopic examination should be carried out to determine which patients actually need further therapy. (b) Definite or equivocal evidences of dysphagia were recorded for only a fifth of these children during the first two weeks and for less than half of them later. Failure to develop late evidences

TABLE V

DIAGNOSIS OF ESOPHAGEAL LESIONS

Evidence	Interpretation			
	Positive	Negative	Questionable	No data or not done
Dysphagia				
early	11	60	4	0
late	35	39	....	1
Bougienage				
early	2	45	3	25
late	30	31	2	12
Esophagram				
early	3	5	....	67
late	18	6	1	50
Esophagoscopy				
early	....	2	2	71
late	16	3	2	54

of dysphagia might be interpreted to mean that the patients had no esophageal lesion to begin with, or that early therapy had been successful in preventing a stricture; in either case, the importance of learning the true state of affairs and incidentally of guiding therapy by more direct means seems obvious. (c) Obstruction to the passage of a bougie is not encountered very often during the first two weeks, but after this time it is a more positive diagnostic procedure. (d) Early or late esophagrams were made for only 32 of the 75 patients, and esophagoscopic examinations were done for only a third of them; all but 4 of the latter procedures were done late, in patients who already had definite symptoms of stricture. Such deficiencies can only be interpreted to mean lack of interest or lack of faith in the validity of these procedures for purposes of diagnosis; here again, regardless of interpretation, the importance of employing such diagnostic aids at a time when they can be useful in guiding intelligent therapy seems all too evident. In passing, it is of some interest to note that esophagoscopic examinations yielded more equivocal reports than did the esophagrams, though certainly no significance can be attached to such a small number of observations. (e) The large number of charts which contained no record of any diagnostic bougienage, any esophagram, or any esophoscopic examination is appalling; we do not

believe that such deficiencies in the records are necessarily a true reflection of deficiencies in the care these patients received, but may be due in large part to wartime shortages of hospital personnel.

From data of this sort, each suspected esophageal lesion was characterized as either definite, probable, or questionable; this was necessary before therapy could be evaluated. In the first group are included 30 children who had classical symptomatology or objective demonstration of esphageal obstruction; in the probable category are 9 who had equivocal symptomatology, or who were not examined adequately, or for whom there were discrepancies among various diagnostic procedures employed; the 36 questionable cases are those for whom there were no recorded evidences of real dysphagia and no demonstration of obstruction by any means at any time during the period of study. It should be reemphasized here that there seemed to be ample justification for therapy based on a diagnosis of presumptive corrosive esophagitis in every case—all these children had been exposed to known corrosive agents, and all of them had oral lesions or evidences of esophageal obstruction at the time they were admitted.

TABLE VI

Therapy	Esophageal Lesion		
	Definite (30)	Probable (9)	Questionable (36)
Dilatation from above			
Regular	7	2	10
Irregular	13	2	24
No data	10	5	2
Gastrostomy, etc.	28	1	0
Total Satisfactory Results	13 (43.3%)	3	17

The type of therapy employed for definite, probable, and questionable cases is briefly summarized in Table VI. The records indicate that only 20 of the 30 children with definite esophageal lesions were treated by any type of bougienage from above; general criteria for regularity as set down by Salzer,[4] Bokay,[5] or more recent authors,[6-10] were met for only 7. Only 2 of 9 probable lesions, but 10 of 36 questionable ones were dilated regularly. There were 29 gastrostomies, all but one of which were done for definite esophageal strictures; in this remaining case, the presence of a stricture was never definitely established but gastrostomy was done one month after the ingestion of lye because of questionable dysphagia and equivocal reports from roentgenographic and esophagoscopic examinations. Up to the time of gastrostomy, 16 of these patients were treated elsewhere, so all of these deficiencies are not entirely attributable to oversights and delays in crowded clinics and wards, or to rapid turnover of professional personnel in a large teaching hospital.

TREATMENT AND RESULTS

a. *General Measures*

Indications for the immediate use of mild neutralizing agents, demulcents, and analgesics hardly require comment; the excruciating pain of corrosive stomatitis or esophagitis needs only to be seen to be appreciated. Adequate fluid and caloric intake usually requires careful parenteral feeding during the first three days when these children cannot tolerate anything by mouth. Concomitant aspiration of the corrosive agent occasionally produces evidences of laryngeal obstruction severe enough to require early tracheotomy. With the copious salivation noted in all these children and their obvious disinclination to swallow or cough, it is not surprising to find that most of them have evidences of aspirational pneumonitis. At least until they are able to clear or swallow their own secretions, they should be carefully positioned for maximal postural drainage within bounds of comfort and should receive prophylactic parenteral antibiotic or chemotherapy against otherwise almost inevitable bronchopneumonia. Gastric lavage is rarely indicated—perhaps only if it is known that a very large amount of lye was taken less than an hour earlier; besides increased dangers of perforation, the likelihood of aspiration is enhanced by this maneuver.

Most deaths occurring within three days after ingestion are due to coincident aspiration causing laryngeal edema or more extensive lesions in the trachea and bronchi; this seemed to be true in the single early death among the present series:

J. W., a colored male aged 12 months, took an unknown amount of lye solution from a "coke" bottle; he immediately cried, gagged, coughed, and was rushed to the hospital. On admission, he was dyspneic, cyanotic, and had obvious laryngeal stridor; there were extensive burns of the lips, tongue, buccal mucosae and pharynx, and the child vomited strongly alkaline coffee-ground material. Oxygen through an airway relieved the respiratory distress; supportive and symptomatic therapy was carried out according to our usual routines and with apparent improvement, but nine hours after admission the infant suddenly died. Permission for autopsy was refused; death was attributed by the coroner to acute toxemia following lye ingestion.

Procedures used for esophageal dilatations are briefly summarized in Table VII. We considered results satisfactory if the patient exhibited no apparent malnutrition or dysphagia for a period of six months since last treatment. Results were classed as unsatisfactory if the patient died, if dysphagia or malnutrition persisted, or if a given form of therapy was discontinued because it was accomplishing nothing toward the relief of stricture or atresia. Among 35 finally uncertain results were 21 with only questionable or probable esophageal lesions who have been delinquent for follow-up studies since they left the hospital, 10 with definite esophageal strictures who have not yet been followed for six months since they were last treated, and 4 who are still being treated outside the hospital.

TABLE VII

Procedures for Dilatation	Result		
	Satisfactory	Unsatisfactory	Uncertain
None	1	2	5
Bougienage —from above*	18	18	21
Gastrostomy, etc.	13	6	10

*See Table VIII.

b. *No Dilatations*

No form of dilatation was accomplished for 8 patients; one of these, who was known to have had a satisfactory result, never had any real evidences of an esophageal lesion after subsidence of the transient early period of severe stomatitis. The 5 with uncertain results were all delinquent, but none of them had proved esophageal lesions and the very fact that they have not returned to the hospital suggests that they have not developed strictures. A brief protocol for one of the patients with unsatisfactory outcome was cited above, and that for the second one follows:

C. W., a colored female of 15 months, was admitted one month after swallowing an unknown amount of an unspecified form of lye and two weeks after onset of progressive dysphagia. She was emaciated, dehydrated, and an esophagram showed narrowing of the middle third of her esophagus; direct blind bougienage and attempts to pass a string were both unsuccessful, and esophagoscopic examination disclosed several large granulating areas beginning at a level 17 cm. from the incisor teeth. Following this diagnostic procedure, the temperature rose sharply and eighteen hours later the infant suddenly expired under circumstances that suggested the likelihood of aspiration. Autopsy was not done. There was nothing in the record to indicate that any form of dilatation had been carried out; plans had been made for early gastrostomy and retrograde dilatation.

c. *Bougienage*

Dilatations by some form of bougienage from above were attempted for 57 of the 75 patients; 8 of the 18 remaining had no type of dilatations at all, and the other 10 came to gastrostomy and retrograde procedures because earlier attempts at dilatation from above had been unsuccessful. Among patients with definite esophageal lesions, there was not one single recorded satisfactory result after this form of treatment; attempts were made over periods of hospitalization of from seven to one hundred and eighty days. Among 18 patients with definite lesions for which bougienage was tried, all but one result had to be considered unsatisfactory—the remaining one has not yet been followed long enough to be sure, but is the only one who has not yet gone on to gastrostomy. Among those with probable and questionable esophageal lesions, results were not quite so poor, though it is of some interest to note the long periods

over which this form of therapy was used—in several instances continuing for thirty-five to forty months, and averaging over a year for probable esophageal lesions, almost five months for those who had never had any real evidences of esophageal lesions recorded at any time! Such results obviously cannot be explained away by the severity of the esophageal lesions treated; they are more logically attributable to the poor cooperation of parents so careless as to permit tragic accidents of this sort in the first place, by distances many patients had to travel, and by oversights and errors inherent in such factors as: (a) lack of any comprehensive integrated schemes for treating these patients, (b) meager evidences of interdepartmental planning of definite therapy based on careful evaluation during the first few weeks, and (c) rapid turnover of professional personnel of the hospital—particularly during the war. Recognizing these faults, and the fact that results of all types of bougienage used for treatment of esophageal lesions from above have been satisfactory for less than a third of the patients so treated, the road to improvement should be clear.

TABLE VIII

BOUGIENAGE — 57 PATIENTS

Esophageal Lesion	Average Duration of Therapy, Days	Results		
		Satisfactory	Unsatisfactory	Uncertain
Definite	50	0	18	1
Probable	378	1	0	3
Questionable	144	17	0	17

It is encouraging to note that there were no deaths attributable to bougienage from above—whether blind, over a string, or esophagoscopically directed; this may, of course, reflect a considerable lack of enthusiasm and diligence in employing these procedures, suggested by the earlier observations (Table VI) that they met any conventional criteria for regularity in only 19 patients. To us, there seems little doubt that dilatations carried out according to the Salzer and Bokay routine *can* be far more successful than these results have indicated, but this would require much longer-continued and more generous portions of what we choose to call the doctor-patient relationship. We have no doubt that these routines, as again recently elaborated by Gellis and Holt[7], are the procedures of choice—provided they can be begun early, that cooperation of the child's parents can be assured for a long period of time, and that there can be careful individualized planning for each individual patient. Lacking such provisions or assurances, it is not surprising that results are as poor as they have been with the present group of patients. It seems worth reemphasizing that results were satisfactory in less than a third of these patients and that there was not a single satisfactory result for anyone known to have had a definite esophageal lesion.

d. *Gastrostomy and Other Procedures*

Gastrostomies were done for 29 patients at intervals of from fifteen days to five years and averaging almost five months after ingestion of the corrosive agent. Nineteen patients came to gastrostomy only after earlier attempts at dilatation from above had been given up, and so far as we could determine the remaining 10 patients had not received previous dilatations of any sort before they arrived at the hospital with strictures impossible to pass from above. All of them came to operation in varying degrees of malnutrition and none of them were considered good risks even for this relatively simple operation. Gastrostomy

TABLE IX

GASTROSTOMY AND OTHER PROCEDURES—29 PATIENTS

Interval:	15 days—5 years; average, 4.7 months	
Duration:	1 month—7½ years; average, 22.4 mo.	
Results:	Satisfactory	13
	Unsatisfactory	6*
	Uncertain	10

*See text.

tubes were left in place for periods of from one to eighty-nine months, averaging over twenty-two months. Following retrograde and combined dilations during this time, satisfactory results were finally achieved for 13 of these patients and 10 others are still uncertain. In one patient, retrograde dilations were not successful, and a satisfactory result was finally secured only after esophagogastric anastomosis done seven

months after gastrostomy. There were 5 other unsatisfactory results of gastrostomy, with subsequent retrograde or combined methods of dilatation; brief protocols for these:

G. S., a colored male 21 months old, was admitted almost immediately after swallowing an unspecified amount of an unknown form of lye; after subsidence of early acute symptoms, he was treated irregularly by bougienage. Within two weeks after the accident he had developed symptoms of true dysphagia, and an esophagram showed rather extensive narrowing in the upper third. Gastrostomy was then done, and his course seemed uneventful until eight days later when he pulled his tube out; attempts were made to reinsert this immediately on the ward and the child developed a generalized peritonitis. After a stormy course, he improved sufficiently so that two weeks later the gastrostomy was revised and the tube reinserted. Judging from the record, everything went along fairly well until the forty-sixth hospital day, about a week after this revision, when the child was found dead in his crib. At autopsy, extensive peritoneal abscesses were demonstrated, the largest being situated in the right subdiaphragmatic space.

J. D., a colored male 2 years old, was admitted to another hospital and treated there for a month after taking an unspecified form of lye; at the time of discharge he had no dysphagia and esophagrams were interpreted as showing no evidence of obstruction. When he returned there two and one-half months later with definite evidences of obstruction, he was referred to our hospital. He was dehydrated and malnourished on admission, esophagrams and direct esophagoscopy demonstrated a stricture of the lower third. Blind and string-directed bougienage for the next two months failed to relieve the obstruction sufficiently, so gastrostomy was done five and a half months after the lye had been ingested. Results were apparently improved by retrograde methods and combined procedures were then carried out in the clinics. Four months after the gastrostomy and eighteen days after what seemed to be a fairly simple dilatation in the clinic, the child developed unmistakable evidences of increased intracranial pressure. Studies completed immediately after readmission indicated the presence of a large abscess in the right occipital area; the patient expired after craniotomy and during attempts at extracapsular removal of the abscess. Autopsy was not done.

G. J., a colored female of 18 months, swallowed an unspecified amount of an unknown form of lye three weeks prior to admission to our hospital. Immediately after the accident, the referring physician had lavaged the stomach and then after partial subsidence of early stomatitis had made unsuccessful attempts at bougienage. On arrival at the hospital she was febrile, dehydrated, and had evidences of bilateral pneumonitis. Further attempts at bougienage here were unsuccessful; after preliminary correction of dehydration, gastrostomy was then done on the sixth hospital day. Esophagoscopy and retrograde dilatation were attempted at that same time but the record contained no report of the results of these procedures. On the second postoperative day the child suddenly developed convulsions and died. Though meningitis or brain abscess following mediastinitis due to rupture of the esophagus might be suspected, permission for autopsy was refused; the coroner's final diagnosis was aspiration pneumonia following lye ingestion.

J. F., a colored male of 12 months, was admitted three weeks after taking an unknown amount of an unspecified form of lye and ten days after onset of progressive dysphagia. Gastrostomy was done almost immediately after admission and retrograde dilatations were carried out regularly, first in the hospital and later in the clinics. About eleven months after the ingestion of lye and two weeks after an apparently uneventful dilatation, he was readmitted in coma and with classical evidences of increased intracranial pressure; craniotomy was done for drainage of a large left parietal abscess; the patient's condition remained critical and he expired two days later. Autopsy revealed multiple brain abscesses.

D. J., a colored female of 12 months, was malnourished, dehydrated, and could swallow only small sips of liquids when she was admitted one month after taking an unknown amount of lye solution. Attempts to pass the stricture with bougies or to demonstrate it with esophagrams were unsuccessful, but esophagoscopy showed it to be high. During these diagnostic procedures the child had two rather severe bouts of aspirational pneumonitis. Gastrostomy was done five weeks after admission, after which apparently successful dilatations were carried out until two months later when the infant died during an acute febrile episode for which a clinical diagnosis of mediastinitis was made. No autopsy was secured.

SUMMARY AND RECOMMENDATIONS

Nowhere has any method yet devised for treating corrosive esophagitis in children yielded completely satisfactory results, but those achieved for 75 children admitted to Charity Hospital during the past six years with suspected or proved lesions of this sort have been particularly poor. The present study has disclosed several rather obvious faults and the reasons for some of them, but would have little purpose unless it led to a few suggestions for their correction:

1. Intensification of educational cam-

TABLE X

OUTCOME FOR ALL CHILDREN

Esophageal Lesion	Results of all Therapy			
	Satisfactory	Unsatisfactory	Uncertain	Total
Definite	13	6	11	30
Probable	3	1	5	9
Questionable	17	0	19	36
Total	33 (44%)	7	35	75

paigns for the prevention of lye poisoning in this area may be amply justified by economic considerations alone; perhaps no group of patients causes a greater financial drain to the hospital caring for them.

2. Inordinately long periods of hospitalization could be materially shortened by careful cooperative planning based on early objective studies of each case. Such planning requires the best talents and judgment of pediatrician, radiologist, endoscopist, surgeon, and social worker. Evaluation of parental attitudes and socioeconomic factors should have at least equal weight with purely anatomic considerations in arriving at decisions as to the best type of therapy for each of these patients.

3. Early diagnostic studies must be carefully individualized but need not interfere with any plan for regular bougienage during the first few weeks. When symptoms are definite, a single esophagram may be all that is necessary to define the site and extent of the esophageal lesion; when evidences of dysphagia are equivocal or absent, *repeated* esophagrams and esophagoscopic examinations may be necessary. Certainly, it ought to be possible to determine within thirty days which patients require prolonged therapy and which ones may be discharged and instructed to return at the first evidences of difficulty in swallowing. For the present group of patients, full advantage has not been taken of the diagnostic facilities any large modern hospital has to offer.

4. We believe that there is enough evidence to indicate that the familiar Salzer or Bokay routines constitute the best method of therapy for all suspected esophageal lesions due to corrosive agents, provided cooperation for their orderly completion can be assured. When careful studies justify continued bougienage as the procedure of choice, adequate steps should be taken to assure regularity of such therapy in the out-patient departments; any inconvenience this might occasion for the staff would be overbalanced by more important considerations centering about emotional disturbances and serious intercurrent infections so common among children of this age who remain for long periods in hospitals. When, on the other hand, it seems obvious that parental cooperation for a period of at least six months cannot be assured, or if lesions are too extensive or do not respond satisfactorily to preliminary dilatations, then more serious consideration should be given to earlier definitive surgical procedures at a time when such patients can still be considered fit surgical risks.

5. Candidates for gastrostomy are those whose esophageal lesions have been neglected, who have the most severe strictures, or who have failed to respond to earlier therapy. In any case, the fatality rate in this group—related largely to later attempts at dilatation—has been over 17 per cent; faced with this risk, there is added justification for considering earlier anastomosing procedures, rather than persisting in attempts at dilatation by mechanical means over longer periods.

6. It is hoped that recognition of the generally poor results which have followed treatment of corrosive esophagitis in our own hospital during the last six years will lead to logical steps toward their improvement.

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CARE OF THE TOXIC NEWBORN

J. D. RUSS, M. D.*

NEW ORLEANS

Toxemia of the mother is one of the most difficult problems faced by the obstetrician; toxemia as a complication in the newborn is frequently overlooked and too often leads to a mortality which might have been prevented. There is no doubt that care of the toxic newborn must begin prior to the time of delivery. Detailed knowledge of the proper analgesics to use, type of delivery to be undertaken, length of labor to be permitted to the toxic mother, nutrition of the mother, oxygen intake of the mother, type of anesthetic to be employed, all have important effects not only on the mother but also on the baby. This is important to such an extent that if proper knowledge is employed in all of these particular factors, more babies can be saved. The use of the proper analgesic, for instance, will in most cases improve the prognosis for the baby long before it is born. These factors are most important when prematurity complicates the situation.

In order to understand how to handle a toxic baby, it is necessary to know what complications, resulting from toxemia, may occur in the baby. These may be divided into two groups: (1) those complications occurring at the time of delivery; (2) those complications (which may be termed delayed complications) which are often apparent during the first ninety-six hours after birth.

A. IMMEDIATE COMPLICATIONS

1. Failure to Initiate Respiration or Establish Respiratory Rhythm.

Signs and Symptoms:

a) Rising or falling fetal heart rate before delivery.

b) Failure of infant to take breath within thirty seconds of severing cord.

c) Irregular shallow respiration.

Prophylaxis:

a) Trained resuscitator at delivery.

Treatment:

a) Proper resuscitation.

2. Prolonged Cyanosis.

Signs and Symptoms:

a) Purplish blue cyanosis of hands, feet, and lips; circumoral pallor.

Prophylaxis:

a) Proper resuscitation.

b) Oxygen (35-40 per cent) for twelve hours after birth, and as necessary thereafter.

Treatment:

a) Early intratracheal aspiration.

b) Thirty per cent carbon dioxide and 70 per cent oxygen for ten to fifteen seconds every thirty minutes.

c) Continuous oxygen as long as cyanosis persists.

d) Make baby cry as much as possible.

e) Small transfusions

3. Cerebral Hemorrhage.

Signs and Symptoms:

a) Cyanosis.

b) Short shrill cry.

c) Flaccidity at the onset, gradually changing to varying degrees of spasticity.

d) Asymmetrical paralysis.

e) Failure to suckle.

f) Fever.

Prophylaxis:

a) Minimal trauma.

b) Use of outlet forceps instead of spontaneous delivery. Cesarean section in selected cases.

Treatment:

a) Entirely symptomatic.

1. Vitamin K (5 mgm. intramuscularly daily).
2. Elevation of head.
3. Oxygen.
4. Minimal handling.

b) Parenteral or gavage feeding in absence of suckling reflex.

4. Atelectasis.

Signs and Symptoms:

a) Recurrent periods of apnea.

b) Mottling of skin.

c) Cyanosis.

d) Shallow, jerky respiratory pattern.

e) Inadequate movement of thoracic cage.

f) Dullness on percussion, and absent or very faint breath sounds upon auscultation over affected area.

g) Irregular rapid pulse.

Prophylaxis:

a) Intratracheal aspiration at birth.

*From the Department of Pediatrics, Tulane University School of Medicine

b) Head of crib elevated.
c) Continuous oxygen for first twelve hours of life, longer if symptoms persist.
d) Hyperventilation; encourage frequent crying.

Treatment:

a) Repeated intratracheal or bronchoscopic aspiration.
b) Inhalations of 30 per cent carbon dioxide and 70 per cent oxygen for ten to fifteen seconds every thirty minutes. Continuous oxygen otherwise.
c) Encourage frequent crying.

B. DELAYED COMPLICATIONS

1. Increased Tendency to Hemorrhage.

Signs and Symptoms:

a) Prolonged bleeding and prothrombin time.
b) Oozing from cord stump, or other sites.

Prophylaxis:

a) Vitamin K to mother orally for seven days before delivery.
b) Vitamin K to baby at birth, and daily for three days.

Treatment:

a) Small transfusions, repeated as necessary.

2. Gastrointestinal Disturbances.

Signs and Symptoms:

a) Decreased or sluggish suckling reflex; apathy.
b) Regurgitation, gagging.
c) Immediate and delayed vomiting (watch for aspiration).
d) Frequent meconium stools, often diarrhea.

Prophylaxis and Treatment:

a) Water only for forty-eight to seventy-two hours; then weak formula.
b) Maintain fluid intake by clyses (saline or 5 per cent dextrose in water) four times a day, as necessary.
c) No breast feeding.

3. Generalized Toxicity.

Signs and Symptoms:

a) Rapid, irregular, weak pulse.
b) Periodic apnea.
c) Anuria.
d) Cyanosis.
e) Pallor.

Prophylaxis and Treatment:

a) Oxygen.
b) Parenteral fluids, to assure adequate diuresis.
c) Incubator care, as for premature infant.

Immediate treatment of the baby thus consists of proper resuscitation followed by transfer to an incubator with continuous oxygen. It is far better to place the baby with the head elevated rather than the reverse, which is routine practice in many hospitals.

Following immediate treatment, the baby is not handled unless necessary and then parenteral fluids are instituted rather than oral feedings. Failure of the suckling reflex increases the possibility of aspiration. Only after forty-eight to seventy-two hours should oral feedings be started. Breast feeding from the mother is not advisable as the milk may be toxic and cause vomiting or diarrhea.

In spite of all precautions and treatment, toxic babies are notorious for sudden change in their course. In many cases, for no perceptible reason, death ensues suddenly. The prognosis should be guarded for ninety-six hours. After this period of time, the outlook is immeasurably improved. Close observation and careful nursing greatly improve the prognosis during the first ninety-six hours.

SUMMARY

In order to prevent as many complications as is possible, it is necessary to understand that analgesia should be as light as feasible, that delivery be as atraumatic as possible, that length of labor itself be held to a minimum, that the anesthetic employed be one that is not injurious to the baby. The mother should have had proper nutrition, and a proper fluid and mineral balance. Oxygen should be given to the mother, preferably just before labor, during labor, and at the moment of birth. Once these measures have been undertaken, the necessity of a trained resuscitator at the delivery cannot be overemphasized. The very recognition that toxemia exists is itself sufficient evidence that trouble is apt to ensue, and the necessity for immediate proper resuscitation of the baby is a prime point. After-care of the baby, once he has been resuscitated and removed to the nursery, consists primarily of heat, fluids, and a minimum of handling. Following the above simple routines may lower the mortality among toxic babies to such an extent that toxemia will no longer hold the dread place it occupies at present.

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LOUISIANA STUDY OF CHILD HEALTH SERVICES

CHAPTER VI

HOSPITALS

The role of a modern hospital as the focal point for good community health programs is too well understood to require elaboration. This chapter will be concerned with an analysis of total child care furnished by the hospitals of our state during the study period of 1945-46, with a brief review of the number, size, and distribution of these hospitals, an examination of their facilities, services, policies, and admission rates for infants and children, and a discussion of some specific characteristics by which the quality of hospital care extended to our young patients may be measured or compared.

There were 128 hospitals in Louisiana, of which 6 were designated as special, 122 as general. Seventy-six of the latter had less than 25 beds each, and 16 of them had 100 or more beds each; 119 of them admitted children and 121 of them cared for newborns. Fifty-five of these hospitals were registered by the American Medical Association. The 122 general hospitals cared for over 86,000 infants and children as in-patients during 1946. In other words, about 1 out of every 9 children in the state was born in or admitted to a hospital during that year.[26] If we exclude some 38,000 hospital births, this figure would still be about 1 out of 16 infants and children under age 15 admitted to our hospitals in a single year; though with obvious duplication, a much higher index of service to the children of our state could be easily justified by including in our calculations a large number of young individuals seen in out-patient departments (estimated at 37,500 visits). Eleven hospitals in the state had out-patient departments admitting children, and 7 of these conducted separate pediatric clinics.

FACILITIES AND SERVICES FOR SICK INFANTS AND CHILDREN

The fact that the largest hospitals are located in the largest cities accounts for the finding that more than two-thirds of all general hospital beds in the state are in its three areas of greatest population density. There are no special pediatric hospitals in the state and only 18 of our larger general hospitals had 5 or more beds set aside exclusively for the use of children; these 18 admitted 31,406 of the 47,366 children other than newborns hospitalized that year. Altogether, the pediatric units in these 18 hospitals comprised 880 beds, about 9.6 per cent of all general hospital beds in the state; this compares favorably with an average figure of 9.3 per cent for the entire United States.[27] Approximately 75 per cent of all hospital beds set aside exclusively for children were in just 5 large metropolitan hospitals and these admitted more than 40 per cent of all children hospitalized during the year of study.

It was interesting to note, as a measure of "turnover," that there was an average of 5.2 child admissions for each of the 9,146 total general hospital beds; this ratio varied among the hospitals from 2.6 to 8.2, being highest for small institutions and for those situated in isolated parishes.

There were 11.8 general hospital beds including 1.13 specific pediatric beds for every 1000 children in the state; though only slightly below the national averages, again there appeared striking differences

[26] As of July 1945, there were 775,861 individuals under age 15 in Louisiana.

[27] Health Services for Children in the United States, American Academy of Pediatrics. To be published.

in favor of metropolitan areas. Data concerning hospital beds for children in metropolitan and isolated areas of Louisiana are compared with those for the United States generally in Table XVI.

TABLE XVI
HOSPITAL BEDS FOR CHILDREN

	Number Per 1000 Children	
	Total Beds in General Hospitals	Beds Set Aside for Children
United States, average	12.8	1.2
Highest ranking state	28.5	2.4
Lowest ranking state	5.5	0.2
Metropolitan and adjacent areas	15.4	1.6
Isolated areas	8.4	0.5
Louisiana, average	11.79	1.13
Metropolitan and adjacent parishes	20.38	2.34
Other parishes	6.04	0.33

It is of more than passing interest to note incidentally that these ratios for Louisiana were higher than those for any other southern state, and rank us in about twenty-eighth place among all 48 states. Because all of the separate pediatric units were located in the larger hospitals, it was not surprising to find that 29,143 out of 47,366 total child admissions were to the 14 hospitals having more than 100 beds each. Ratios for total child admissions to all general hospitals during the study period were slightly more than 61 per 1000 children (excluding newborns)—93.7 per 1000 in metropolitan and 39.2 per 1000 in isolated parishes. These figures may be compared with the national average of 51 per 1000; Louisiana ranks in seventeenth place among the 48 states in this respect. Differences as to metropolitan and isolated parishes are of about the same order of magnitude as those expressed earlier in Table XVI. Of the 122 general hospitals, 3 restricted admissions to negro patients and 81 accepted both white and non-white; in the metropolitan parishes, the rate of hospitalization for negro children was about equal to that for white children. The very small hospitals of the state—76 of them with less than 25 beds each—accounted for about 16.4 per cent of total child admissions and nearly a fourth of all hospital deliveries.

Only 2 hospitals in the state were reported to have isolation units of 10 or more beds set aside for communicable diseases in children; 77 hospitals reported that isolation and or cubicle-separation procedures were followed for new child admissions. Perhaps representative of policies concerning a number of communicable diseases was the finding that 35 out of 46 hospitals having 25 or more beds would accept cases of poliomyelitis for diagnosis and emergency treatment only, and but 2 would accept such cases for care. Thirty of these larger hospitals reported that individual equipment, such as towels, washbasins, and thermometers, was *not* used for infants and children, yet 42 of them used only pasteurized milk for their young patients.

One could hardly expect hospitals of less than 25 bed capacity to have 5 or more beds set aside exclusively for the use of children —pediatric units. It was mentioned before that 18 of the 46 larger hospitals had such units; of the 18, however, only 4 had separate wards for sick infants. Eighteen of all the general hospitals in the state had regular house staffs; 8 had interns or residents assigned to pediatric units; and 17 of them had graduate nurses on duty at all times in such units. Twenty-five hospitals had dietitians on their staffs, and 8 of them had organized social service departments.

While 59 of the 122 hospitals had clinical laboratories, a few selected procedures considered necessary for good pediatric practice could be obtained in 32 of them. Oxygen equipment suitable for children was found in 69 of the 119 hospitals which admitted children. Blood or plasma banks were present or easily accessible to 42 of the 46 larger hospitals, and 27 of these had Rh-negative blood readily available for transfusions.

Unquestionably, some of these deficiencies have been corrected since our survey was made, yet many of them still exist. Though these items certainly do not entirely measure the adequacy of hospital fa-

cilities for the care of sick infants and children, they do constitute the best measurable indices available; they were collected with great care, and they do seem clearly to indicate several logical directions for improvement.

HOSPITAL CARE FOR NEWBORN INFANTS

For a number of well known reasons, there has been a tremendous increase in the percentage of babies born in hospitals, particularly during the past ten years. In 1935, 37 per cent of all babies born in the United States were born in hospitals, and in 1946 the percentage had risen to 82.4, more than double; in many metropolitan areas more than 95 per cent of all babies are born in hospitals.

There were 38,835 births in the hospitals of Louisiana during the period of this study, and the average duration of hospitalization for the neonatal period was 5.1 days. Eighty-five per cent of all white births and 48 percent of negro births in Louisiana in 1946 were in hospitals; these figures are higher than the averages of 70 and 25 per cent respectively found for 12 southeastern states, and are exceeded for this area only by the figure of 88 per cent for white births in Florida. Of the total hospital admissions to age 15, those arriving via the delivery rooms made up almost 45 per cent. The magnitude of these proportions emphasizes the importance of careful planning of nursery facilities in new hospitals and good training programs to furnish personnel to run such units. From the fact that there were 1400 bassinets and 196 incubators in the hospitals, it can be easily calculated that this equipment was abundantly used; if 5 per cent of the hospital births were premature infants—a very conservative estimate—there were about 10 prematures for each incubator that year. While there were accommodations for about 1600 newborns, there was a grand total of 9146 beds available for all other ages in the same hospitals—5.7 times as many.

It is noteworthy that 34.4 per cent of all these babies were born in the 6 largest hospitals having 250 or more beds, and that 23.5 per cent of them were born in the 76 hospitals having less than 25 beds each. Only 6.4 per cent of hospital births in the metropolitan areas occurred in small hospitals, but over 44 per cent of those in isolated parishes were in hospitals with less than 25 beds. Total hospital admissions for newborns and other children are compared with corresponding population data for the same period in Table XVII.

TABLE XVII
HOSPITAL BIRTHS AND CHILD ADMISSIONS IN LOUISIANA DURING ONE YEAR, COMPARED TO POPULATON OF NEWBORNS AND OTHER CHILDREN

Admissions	
Newborns	38,835
Sick infants and children	47,366
Population	
Newborns (1945)	57,838
Children to age 15	775,861

QUALITY OF HOSPITAL CARE

Any survey, no matter how carefully designed and conducted, can do no more than measure—largely on a comparative basis—only a few of the numerous factors which determine the quality of care extended to patients. It is not entirely fair to assume that apparent deficiencies or excesses in a small number of measurable items necessarily reflect similar variations in qualities which do not lend themselves so readily to numerical consideration. There is no reason to assume, for example, that a state having no special children's hospital has no place to care for sick children. Despite such recognized limitations, this study of a few items which could be enumerated has permitted a number of interesting comparisons concerning the quality of hospital care for children in Louisiana.

The items we have chosen to measure, because we believe they have a direct relation to the kind of service rendered to children by hospitals, include American Medical Association registration, separation of space, organization of medical, nursing, and dietary staff, and provision for selected services generally accepted as necessary for good pediatric practice. In Table XVIII, some of these data pertaining to 46 hospitals in Louisiana having 25 or more beds each are compared with those of corresponding size and distribution over the entire United States.

TABLE XVIII

PER CENT OF CHILD ADMISSIONS TO LARGER HOSPITALS* WITH SPECIFIED CHARACTERISTICS

	Louisiana			Entire United States		
	Average, per cent	Metropolitan and Adjacent Parishes, per cent	Isolated Parishes, per cent	Average, per cent	Metropolitan and Adjacent Counties, per cent	Isolated Counties, per cent
Separate pediatric unit	79	89	56	76	83	52
Separate ward for infants other than newborn	13	11	18	54	61	32
Graduate nurse on duty at all times in pediatric unit	74	81	56	63	70	38
Any house staff	68	85	27	62	76	18
Clinical laboratory	96	99	88	90	94	75
Selected laboratory services available	90	95	76	81	88	58
Trained dietition on staff	78	90	49	80	88	56
Average for 7 characteristics	71	78	52	72	80	47

*Having 25 or more beds, and admitting children.

A quick glance at these figures indicates that these hospitals in Louisiana compare favorably with averages for the entire country except as to separate facilities for the care of sick infants; there is gratifying agreement in the quality of hospital care for infants and children in our state and in the country generally, as determined by mean values for the seven characteristics we used as yardsticks.

Expressed another way, all of the 18 hospitals in Louisiana with separate pediatric units were registered by the American Medical Association; 22 per cent of them had a separate ward for infants other than newborn; 72 per cent of them had a house staff; and 94 per cent of them reported that they had a graduate nurse on duty at all times in their pediatric units; 94 per cent of these hospitals had clinical laboratories and selected laboratory services were available in 88 per cent of them; 83 per cent had qualified dietitians on their staffs.

There is no doubt that general facilities for care of patients are less adequate in very small hospitals anywhere in the United States, regardless of urban or rural location. In Louisiana, about 23.5 per cent of all hospital births and 16.4 per cent of all other children hospitalized were in hospitals having less than 25 beds. Four easily measurable deficiencies of these small hospitals appear in the brief tabulation which also serves to remind us of several problems incident to current programs for new hospital construction in rural areas.

TABLE XIX

PROPORTIONS OF SMALL AND LARGE HOSPITALS IN LOUISIANA HAVING SPECIFIED CHARACTERISTICS

	Less than 25 Beds		25 or More Beds
	Metropolitan parishes, per cent	Isolated parishes, per cent	Average for state, per cent
Registered by A. M. A.	13.3	31.1	73.9
Separate nursery for newborns only	46.7	52.5	82.6
Graduate nurse on duty at all times in nursery	6.7	4.9	58.7
Clinical laboratory in hospital	26.7	24.6	87.0

SPECIAL HOSPITALS

For purposes of this study, 6 hospitals in Louisiana were classed as "special" inasmuch as their services were restricted to particular disorders and their organization was such that it did not lend itself to the type of tabulations used for the other hospitals hereinbefore classed as "general." The relatively small, but nevertheless very important contribution these 6 special hospitals make to the total amount of medical

care extended to children is shown in the following table.

TABLE XX
ADMISSIONS AND DAYS OF CHILD CARE AT SPECIAL HOSPITALS

Type of Hospital	Number	Number of Children Admitted in 1946	Total Days of Child Care
Eye, Ear, Nose, and Throat	2	650*	2,228*
Nervous and Mental	2	52*	10,950
Orthopedic	1	85	11,838
Convalescent	1	106*	2,190*
Total, special hospitals	6	893*	27,206*

*Estimated by hospital directors.

During the year of study, these special hospitals admitted 1.8 per cent of all children hospitalized in the state. The small number of admissions to each of these special hospitals does not necessarily imply a lack of adequate facilities in the state to care for the particular diseases they treat. On the other hand, there is no question but that the hospital facilities of Louisiana are still inadequate to care for a number of conditions to which special hospitals are ordinarily dedicated; for example, there are no separate provisions made for the care of tuberculous children, rheumatic children, or convalescents, and those for the institutional care of mentally ill or retarded children are still almost entirely of simple custodial nature. Incidentally, only 32 nervous and mental hospitals were found in the entire United States which admitted children for treatment, rather than for simple custodial care.

SUMMARY

1. About 1 out of every 9 children in Louisiana was born in or admitted to the general hospitals of the state during 1946. In these hospitals, there were 11.8 total hospital beds and 1.13 specified pediatric beds per 1000 children in the population. There was an average of 5.2 child admissions for each of the general hospital beds in the state.

2. There were about 1.6 times as many child admissions to hospitals in the metropolitan areas as in the isolated parishes. Special hospitals admitting children carry a very small but important portion of the total hospital load.

3. Eighteen of the larger general hospitals in Louisiana had special pediatric units; 9.6 per cent of all our general hospital beds were set aside for the use of children.

4. According to the number of hospital births and admissions of sick infants and children up to age 15, about 45 per cent of the total admissions to hospitals and 37 per cent of total hospital care for children was for newborns.

5. Judging by seven measurable items chosen for comparison, the quality of hospital care extended to children in Louisiana compares favorably with that for the United States generally. Twenty-nine per cent of child admissions and 40 per cent of births were in hospitals lacking certain characteristics considered desirable for good pediatric care.

CHAPTER VII.

CONCLUSIONS AND RECOMMENDATIONS

It has been stated previously that this study of Child Health Services in Louisiana is a part of the first nationwide attempt by physicians themselves to analyze the quantity of medical care available to children. It does not attempt to answer the question as to what constitutes adequate or optimal care—too few yardsticks are available. Our aim now is to assure the best care possible; recommendations based on this study should indicate channels through which such care may be provided.

Although the study was limited to health aspects of child care, it has been pointed out that many economic, sociologic, and educational factors affect child health directly; hence sustained improvement in the health and welfare of our children must depend on cooperative effort in many fields of endeavor. No attempt has been made to paint the picture in somber tones, but rather to present things as they are—factual and comparative data as a basis for

future planning. As a matter of fact, in some respects Louisiana compared favorably with surrounding states, as for example, improvement of infant mortality, percentage of babies born in hospitals, and hospital beds available for children.

I. CHILD HEALTH COUNCIL

The cooperation of many organizations and individuals has made this study possible. Continued cooperation should develop a coordinated, long range program of child health improvement. For this purpose, it is recommended that a Child Health Council be established, with representation from the State Medical Society, State Dental Association, State Pediatric Society, Rural Health Council, Tulane and Louisiana State University Medical Schools, Academy of General Practice, State Department of Health and its section on Maternal and Child Health, Women's Auxiliary to the State Medical Association, State Tuberculosis Association, National Foundation for Infantile Paralysis, the State Departments of Education and Public Welfare, the State Hospital Planning Commission, the Louisiana Conference of Social Welfare, the P.T.A., American Legion, and any other organizations directly interested in the health and welfare of children. Financial aid should be provided to support a full time secretary functioning to secure systematic and sustained effort.

II. DISTRIBUTION OF MEDICAL CARE

A marked disproportion existed between the number of children per physician and dentist in rural parishes as compared with metropolitan parishes. Though some improvements have undoubtedly occurred during the past two years,[28] the needs of rural and semirural parishes are still obvious; 60 per cent of the child population of our state resides in these parishes. A Rural Health Council has already been established by the American Medical Association and the Louisiana State Medical Society and has been working for some time on the problem of attracting physicians to rural areas. It is recommended that the proposed Child Health Council work closely with this group, in developing an active program of enlisting physicians for areas of need.

Construction of new hospitals in these areas will afford the incentive of better clinical and laboratory facilities for future practitioners. Consideration should be given to other plans, such as a program of education for rural needs and opportunities, conducted by medical societies and medical schools. The encouragement of local communities to attract good physicians and dentists by affording adequate working and living facilities and financial support is desirable. Extension of public health facilities is to be considered. Subsidies to physicians with training in pediatrics would attract both general practitioners and pediatricians to settle in areas of need (either direct subsidies or educational subsidies as provided by various foundations).

Careful study of these and other plans should lead to a choice which is best suited to local needs and opportunities, but it is recommended that, insofar as possible, these problems be solved within the framework of the private practice of medicine.

III. GRADUATE AND POSTGRADUATE PEDIATRIC TRAINING

Inasmuch as general practitioners furnish most of the medical care for children in our state, programs for postgraduate education in care and supervision of children should be expanded. Louisiana State University Medical School and the State Board of Health are cooperating in conducting traveling refresher courses in selected areas. Tulane Medical School, through its division of postgraduate medical education, conducts a number of intramural refresher courses for general practitioners and pediatricians each year. These are not yet adequate to meet the goal of *continuing* pediatric education of all physicians who treat children. Further financial support is necessary for these as well as undergraduate programs of education in pediatrics. Recognizing the financial

[28] Since the study was made in 1946, 12 qualified pediatricians have located in isolated semirural and rural parishes, improving the distribution markedly.

emergency in most medical schools, the American Medical Association is sponsoring a nationwide foundation for support of medical education; this program deserves the enthusiastic cooperation of all physicians in Louisiana.

It is recommended that those physicians who participate in community health services related to children, such as school health programs, well baby and preschool clinics, be encouraged and eventually required to have some training in care of children. Toward this end the State Board of Health should cooperate with medical schools in arranging for scholarships and assisting physicians to secure proper training.

It is recommended that a review of current pediatric literature useful to the practicing physician be arranged cooperatively by the Louisiana State Pediatric Society and the New Orleans Medical and Surgical Journal.

IV. HEALTH SUPERVISION AND COMMUNITY HEALTH SERVICES

Serious gaps have been shown to exist in the proportion of children under health supervision. The Child Health Council should consider methods of supporting the parent education program carried on by the State Department of Health in order to increase the number of parents who will seek such care from their own physicians. This aim will also be furthered by extension of school health services to all schools in the state and by raising the standards and quality of these services. A large increase in the corps of public health nurses is essential to both of these developments as well as to the extension of Child Health Conferences.

Considerable extension of child health conferences must be planned to serve those who have no physician. Location, frequency, and size of those conferences should be determined on the basis of local conditions and needs. Rural areas, where services are least available, and general medical services also scarce, deserve first attention. Louisiana's unfavorable record in regard to certain preventable diseases points up the need for intensive efforts to assure adequate immunization of every child against these diseases.

Child health closely parallels the general state of public health activities in a community. Health units should be established in all parishes which do not have this service. Increased inducements to attract competent physicians to take posts as parish health officers are basic to success in local health work. Integration of health centers with new hospital construction under the Hill-Burton act is a logical development to be fostered.

SPECIAL SERVICES

Development of services for crippled children in Louisiana can serve as a model for extension of similar service to the "medically crippled" such as cardiacs, chronic nephritics, and severe asthmatics.

The need for convalescent homes is particularly serious. The recently established school for spastic children in Alexandria serves a definite need, but is only a start. Establishment of institutions for custodial and remedial care of mentally deficient or retarded children and expansion of real mental hygiene programs are other problems which challenge intelligent planning in the field of Community Health Services. A well rounded rheumatic fever program, including provision for case finding, consultative diagnostic facilities and resources for placement, should be instituted at the earliest possible moment.

V. HOSPITALS

While the situation in Louisiana as to hospital beds for children appears favorable—due largely to regional charity hospital allocations—deficiencies in quality and distribution of hospital facilities have been documented by this Study. To correct these, it is recommended that the proposed Child Health Council and State Pediatric Society make all pertinent detailed data that we have collected available to any qualified individual or group interested in new hospital construction, remodeling, or otherwise improving existing facilities in any part of our state.

An affiliate-hospital program, with improved staff meetings, demonstrations, and

exchange of house officers, would bring to outlying hospitals continuing instruction and adjunct services from larger teaching hospitals and the medical schools. In this way, the quality of care rendered in smaller hospitals might be improved, and personnel from the larger medical centers might gain better insight into the problems and limitations continually imposed on their colleagues in the field. Provision should be made for adequate statewide consultation services, and for inclusion of a pediatrician's services for each hospital admitting children.

The proposed Council might well concern itself with the problem of reviewing and revising regulations and policies concerning requirements to be met by hospitals admitting children, facilities, and technics concerned with care of premature infants and of children with certain communicable or chronic diseases.

Inclusion of more adequate laboratory services and arrangements for hospitalizing infants and children in new hospitals should do much to attract well trained younger men to rural areas. Close and continuing cooperation of the Child Health Council and the Rural Health Council will be necessary to work out the most pressing problems concerned with better and more equitable distribution of hospital services in rural areas.

VI. PROGRAM FOR PREMATURE INFANTS

Remarkable progress in this field has been made in many states and Louisiana is fortunate in that an extensive program has already been started centering around the newly enlarged premature unit in Charity Hospital at New Orleans. This unit will act as a training and demonstration center under the joint sponsorship of the State Department of Health, the Hospital, and the two medical schools. General cooperation throughout the state and development of other units will be necessary to be sure that all premature infants benefit from such special care. Improvement in safe transportation technics is an important step.

VII. DENTAL HEALTH SERVICES

As noted in the body of this report, certain deficiencies in dental care have come to our attention, similar to the medical findings in extent and degree.

As a result of the cooperation and interest of the Louisiana State Dental Society and their committee on improvement of dental health, these findings will be reported in further detail by the Dental Society and recommendations leading to a program of improvement will be developed by this organization.

The Child Health Council should make available all pertinent information concerning dental care to the dental organizations and should assist in every way possible in the development of their program.

Physicians, together with all other professional personnel directly concerned with the care of children, should assume leadership in planning for needed improvements based on this study. Citizens of the state, through elected leaders and through community planning, must assume responsibility for carrying out these improvements. Neither doctors nor hospitals rise much above the level of their communities; statewide interest and cooperation of each local community must be secured if these plans are to succeed. If this study is found useful as a basis for planning, it will have served its purpose.

NEW ORLEANS
Medical and Surgical Journal

Established 1844

Published by the Louisiana State Medical Society under the jurisdiction of the following named Journal Committee:

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News material for publication should be received not later than the eighteenth of the month preceding publication. Orders for reprints must be sent in duplicate when returning galley proof.

Manuscripts should be addressed to the Editor, 1430 Tulane Ave., New Orleans, La.

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PEDIATRIC ISSUE OF THE JOURNAL

In this issue of the Journal the scientific material is in the field of pediatrics. The papers delivered in this section at the Sixty-eighth Annual Meeting of the Louisiana State Medical Society, together with certain others, were grouped by the Editorial Committee of the Louisiana State Pediatric Society for publication. The range of interest covered by these articles is considerable, and the facts presented will serve the general practitioner as well as the specialist.

In a certain sense the practice of the diseases of children is a cross section of general medicine with certain intensifications. The latter are in good part the result of the circumstance that infections set upon the child host before immunity defenses have had a chance to develop, and the other circumstance that degenerative diseases are usually not present.

The general practitioner can well profit by these considerations and these articles on general medicine from the pediatric point of view.

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THE LOUISIANA STUDY OF CHILD HEALTH SERVICES

In this issue of the Journal is published the final installment of the Louisiana Study of Child Health Services. This is part of a nationwide study undertaken in the past three years under the direction of the American Academy of Pediatrics. Other installments have appeared in issues of the two previous months.

The study relates principally to the year 1946. This investigation is a comparative one in which the services and facilities of the state are viewed in the light of the national or sectional average. No effort is made to state what constitutes adequate or optimal care. The report is in six chapters of analytical data, with one additional for conclusions and recommendations. Certain facts gleaned from the report give cause for reflection.

The state's death rate during 1940 was the fourth highest in the nation. However, during the period 1933 to 1946 improvement occurred. The rate was 70.1 in 1933, and 37.2 per thousand in 1946. This is to be compared with a national average of 33.8. Children in Louisiana received about four-fifths as much medical care as the national average, as gauged by the number of children seen by doctors on a single day. On an average day in Louisiana, 3.15 of every 1000 preschool children received health supervision; this rate was one-third less than that for the United States generally. Physicians in private practice rendered more than 90 per cent of this service.

Louisiana had 32 per cent more children per physician than the national average.

Seventy per cent of the medical care extended to children was furnished by general practitioners. For each of the 57 pediatricians there were 13,612 children—compared with the national average of 10,299. Community health services in Louisiana were somewhat less than the national average.

Louisiana compares favorably with the surrounding states in the percentage of babies born in hospitals and the hospital beds available for children.

In evaluating the position we hold in these several comparisons, inquiry must be made into the educational and economic condition of the state. The report states that income per capita in Louisiana for the period 1944-46 was $811. Another figure from the Bureau of Governmental Research for the year 1946 was $784. This puts Louisiana sixth from the bottom. The same source reports that the State tax (excluding local taxes) revenue in 1947 was $50.07 per capita, or eighth from the top. In 1940, (the most recent date available) we had the highest percentage of illiteracy. Our state then is sixth from the bottom in income, eighth from the top in taxes, and at the bottom in literacy. In the various categories in which child health care was studied the state was near the average in the majority of instances, and in two instances better than the average. In view of these facts, the medical profession has good cause to congratulate those who care for children on an excellent result in the face of obvious difficulties.

Medical progress has been built on the efforts of generations of physicians. The recommendations at the conclusion of the report are laudable in their aim. However, the method suggested for their operation may not appeal to the physician who will probably continue to do most of the care of children—the general practitioner.

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THE SURGICAL ASSOCIATION OF LOUISIANA

On November 11, 1948, surgeons of this state held an organization meeting and adopted a constitution and by-laws for the Surgical Association of Louisiana.

Preliminary efforts over the past year were directed towards forming a nucleus of general surgeons living in New Orleans, who were not members of specialty societies within the field of surgery. Dr. Roy B. Harrison was president. When this group was expanded to include members over the state Dr. C. Grenes Cole was elected president, and Dr. Henry G. Butker, secretary.

The stated purpose is to foster surgical knowledge; to aid surgical advance of the hospitals; to promote and maintain harmonious moral and ethical standards among the members. The only paper was that of Dr. Urban Maes on "A Plea for Better Clinical Diagnosis in the Field of Medicine." The attention of the group was on the clinical and on the altruistic phases of the surgical field. The Surgical Association of Louisiana has been launched auspiciously and the founders are to be congratulated.

The various surgical specialties have statewide organizations which have served well the purpose of coordinating the efforts of their members. It is timely that now the general surgeons have an organ which will give a focus to their individual efforts in maintaining the high standards of surgery and serve as a mouthpiece for this most substantial and definitive part of medicine. Organized medicine faces a greater threat now than ever in the past. On the one hand it is beset by a world in which ethical standards suffer materialistic attrition; on the other, by the communistic trend toward state medicine. The recent presidential campaign and election give proof to the gravity of the situation.

This compact surgical body will have the opportunity to help dissipate the apathy with which the approaching crisis is viewed, and to serve its stated objective in the process.

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CORRECTION

In the October issue in the article "The Application of Fundamental Knowledge to

the Clinical Problem of Hypertension" the fourth, fifth and seventh figures in the column on averages on pg. 143 should be as follows: 262,286; 99,033; Total 2,012,802.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

A TRIBUTE TO THE GENERAL PRACTITIONER FOR SERVICES RENDERED

Dr. Charles Manly Horton, of Franklin, has been selected by the Louisiana State Medical Society as the outstanding general practitioner of the State of Louisiana for 1948. This honor was bestowed on Dr. Horton after the component societies throughout the state sent to the office of the Society recommendations of members for this distinction and after such recommendations were acted upon by the Executive Committee of the organization. The selection was made based upon data received concerning training and type of practice which Dr. Horton has had since he started his medical course.

Dr. Horton graduated from Tulane University in 1911, after having completed a two-year resident student term at Charity Hospital, New Orleans. His first location as a general practitioner was in Guntown, Mississippi, where he served as assistant to an elderly doctor who was in poor health. Here he was required to do everything except major surgery. The nearest hospital was in Memphis, some 100 miles away and all major surgery from the community was sent there. There were approximately only 250 people in this rural community; however due to their wide distribution on many occasions a call to visit a patient resulted in 20 or more miles on horseback. Dr. Horton had no automobile while in Guntown and all calls were made by driving or riding a horse.

After serving the community of Guntown for some months he decided to go to Franklin for a "short stay". Here he established a practice which he has found it impossible to leave and has remained for thirty-seven years. The experiences which he has had in this locality have been many and varied. In his early practice conditions of travel travel were similar to those in Guntown. The mud roads were often impassable and many calls were made by boat on the bayou. His first car—a model T Ford—many times had to be towed out of a mudhole by mule or horse obtained from a farmer nearby. Of course, when a baby was to be delivered, the doctor, after making a visit to ascertain the condition of the patient, had to remain until delivery took place due to the hardship of travel.

Dr. Horton has grown with his present community and now is one of the busiest doctors in the town. His practice is still

of a general nature and he treats all types of cases except those needing the services of a specialist, which cases he refers to other doctors in the town or in nearby communities. Many of his obstetrical cases are still delivered in the home. He covers practically the same territory now which he covered thirty-seven years ago. He states, however, "with the improvement of highways and the advent of automobiles, the life of the country doctor has become more pleasant and more efficient."

It is felt that this is an honor well deserved by Dr. Horton. He has been recommended to the Board of Trustees of the American Medical Association for national recognition. If he is selected by the Board as one of the three physicians to be recommended to the House of Delegates of the A. M. A., his name will be included on the ballot voted upon by members of the House at the interim meeting to be held in St. Louis November 30-December 3. We wish for him this honor also.

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MESSAGE FROM THE PRESIDENT OF THE STATE SOCIETY

The election of Mr. Harry Truman as President of the United States for the coming four years has placed the medical care of the American people squarely in politics. For a number of years compulsory health insurance or socialized medicine has been banged about the halls and committee rooms of Congress by politicians and social planners, but thus far has made no serious threat of passage. Always the more conservative and, we might say, more thoughtful of the congressmen have turned it down. True, the measure usually had the blessings of the White House in the person of Mr. Roosevelt and Mr. Truman, but they apparently had not gone all out for it.

With the coming Congress the situation will be different. Mr. Truman made compulsory health insurance or socialized medicine one of the major planks in his platform. It was dangled before the electorate as something to be given the people without cost, or at a greatly reduced cost and thus a means of getting votes. Under such circumstances it is to be expected that a measure providing for some form of socialized medicine will be introduced into the next Congress at an early date and, more important, it will have the full blessings and active support of the President.

All of us who oppose socialization in our government and particularly the socialization of medical practice have a job cut out for us if we hope to prevent the passage of such a measure. In past years we have been successful even though the measure has continually popped up, but we must face the fact that the fight will be harder this year than ever before. There are some who feel that the fight is useless and the outcome inevitable, but we cannot accept this idea and we feel that we should fight to the last ditch. Mr. Truman won the election in the face of apparent defeat and so can we win, armed with right and sound judgment on our side.

If we are to be successful in this fight we must begin now rather than wait until Congress is in session and the measure actually introduced. There are several things that all doctors can do at the present time. First, they can individually contact their congressman, explain to him how they feel about such a measure and try to get him to oppose it.

You can be sure that these men will be approached by those favoring socialized medicine as they have been in the past so that it is up to us to make our voice heard as well.

Next, we should not miss any opportunity to inform the public as to the harmful effects of such a measure as well as to its implication in the complete socialization of this country. In order to do this, doctors must inform themselves about the bills that have been introduced in Congress and the failures that have occurred in other countries from similar measures. We should be prepared to present a clear and logical case in opposition to any such measure. It is important that our reasons for opposing such a measure shall be presented to those who apparently are its active supporters.

There is a large section of the population who think as we do, but the others and particularly the labor unions apparently think otherwise. They are the people before whom we should appear, as they are the ones who must be won over to our side. A candidate for election makes progress by winning votes from his opponent and so will we make progress by converting those who now favor some such change in medical care.

Undoubtedly we can have more influence with our own patients than anyone. It therefore behooves us to use that influence. Talk to them, explain the personal ill effects of such a measure, and above all, get them to express their opposition in a letter or other message to their congressman.

Finally, the fight against this type of legislation will cost money which must be supplied in a large part by the doctors. It is unfortunate that our government has reached such a state that doctors, or any other group of professional men should have to spend a large part of their time and money in an effort to protect their business or profession from the government. We are faced, though, with just that situation and we should not fail to contribute to those organizations or groups who are actively fighting to help preserve a free and independent medical profession.

Perhaps the most serious obstacle we can place in the path of such legislation is a public satisfied with the type of service we are rendering. The public or consumer will in the long run decide the issue and perhaps rightly so. Such being the case we must see that they are satisfied with the goods that we sell, namely medical care. If our patients are satisfied with the type and cost of medical care they are receiving, then they will resist or oppose such legislation with us. But if they feel that medical care is not generally available and that they are being charged excessive prices for the medical care they receive, then they will favor some change such as the government will propose. Patients who have been charged one hundred dollars for a job which they think is worth only fifty will be as resentful as you would be when charged one hundred dollars for a suit of clothes which you think is worth only fifty. Whenever that happens, we lose a friend and booster and unfortunately it has happened many times in the past. People generally are willing to pay adequate fees but they resent excessive fees and will attempt by some means to curb such practice. Always remember that a satisfied customer and a satisfied patient is our best booster and our best friend.

This has all the makings of an all out fight between those who favor socialization of our government and those who oppose such a change. Ours is the first group to be attacked because of the political appeal of medical care. We must win this first big battle or inevitably we will have complete socialization of our country such as England now has. May we be saved from such a mess.

M. D. HARGROVE, M. D., President.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

RAPIDES PARISH MEDICAL SOCIETY FOUNDERS DAY FORUM

The annual Founders Day Forum, sponsored by the Rapides Parish Medical Society, will be held in Alexandria, Louisiana, January 15, 1949, at the Bentley Hotel.

Again an outstanding program has been arranged to be presented by men from Tulane Medical University and Louisiana State University. The following have accepted and will present papers:

Dr. Julius W. Davenport
Dr. Willard R. Wirth
Dr. Carl N. Wahl
Dr. Curtis H. Tyrone
Dr. W. R. Akenhead
Dr. Samuel A. Romano
Dr. E. Perry Thomas
Dr. J. K. Howles
Dr. A. Scott Hamilton, Monroe, Louisiana.

An outstanding speaker will be present at the Founders Day Banquet, which will be held that night at the Bentley Hotel. At that time the new officers of the Rapides Parish Medical Society will be introduced to the gathering. An attractive program of medical interest and of entertainment has been arranged. This Forum was one of the best attended meetings in the State last year. More than 100 participated. The invitation is extended to all members who wish to attend. The meeting has every appearance of being a most satisfactory and profitable gathering. Sessions will be held in the morning and in the afternoon, and there will be a banquet in the evening.

MEETING OF THE FOURTH DISTRICT MEDICAL SOCIETY

Research in aviation medicine was discussed at a dinner and joint meeting of the Fourth District Medical Society and the Shreveport Medical Society at Shreveport Charity Hospital on Tuesday night.

Dr. W. C. Gray of Springhill was elected president of the Fourth District Medical Society at the meeting. Retiring president is Dr. William M. Hall of Shreveport.

Capt. Ashton Graybiel, Commander C. W. Gell, and Commander M. T. Martin of the U. S. naval air station, Pensacola, flew to Shreveport to tell the physicians about recent research work at the Naval School of Aviation Medicine.

Dr. Graybiel, who is coordinator of the school, spoke of special work on hazards of night flying, heart abnormalities, and problems of breathing resulting from a disordered nervous system. He described several devices recently perfected and set in operation at the school which will provide heretofore unobtainable information regarding effects of speed, altitude, and night flying upon aviators.

Commander Gell and Commander Martin are Navy pilots in addition to being medical officers.

The Navy men were welcomed by Dr. Ralph Riggs, who served with them in World War II, Dr. M. D. Hargrove, president of the Louisiana State Medical Society, Dr. J. E. Knighton, Jr., president of the Shreveport Medical Society, and Dr. Hall.

In addition to Dr. Gray, other new officers of the Fourth District Medical Society are Dr. Robert Van Horn of Mansfield, vice president; Dr. Joseph Holoubek of Shreveport, secretary-treasurer, Dr. L. S. Huckaby of Coushatta, delegate to the state convention, and Dr. Jason C. Sanders of Shreveport, alternate delegate to the state convention.

Retiring officers are, in addition to Dr. Hall, Dr. S. M. Richardson of Minden, vice president, and Dr. Richard Brunazzi of Shreveport, secretary-treasurer.

MEETING OF THE SIXTH DISTRICT MEDICAL SOCIETY

The Sixth District Medical Society held a very fine meeting at Hammond, La., on Tuesday evening, November 16, at the Cave Tangi. In spite of the bad weather, there was a good attendance and a wonderful scientific program was presented. Dr. E. H. Countiss of New Orleans spoke on "Office Gynecology" and Dr. M. M. Bannerman of Baton Rouge presented a paper on "Emergency Treatment of Hand Injuries." The essayists were complimented on their excellent presentations and a lively discussion from the group followed.

The group also had the opportunity of hearing Dr. A. V. Friedrichs, Chairman of the Council of Medical Service and Public Relations of the Louisiana State Medical Society who gave a very interesting talk on the present and future activities of his Council. Dr. C. G. Cole gave some very valuable information on legislative matters which came up before his committee during the last session of the Legislature. Dr. Robert Sharp, Chairman of the Arrangements Committee of our 1949 Annual Meeting told of the progress of his Committee and extended to all those present an urgent invitation to attend. The group was also addressed by the Secretary-Treasurer of the State Medical Society who discussed the present and future status of medical legislation. He dwelt primarily on the importance of the medical profession taking more active steps now to prevent the enactment of such legislation. All these talks were very enthusiastically received and encouraged some very important discussion.

The Sixth District Medical Society is one of our most active district organizations and everyone at the meeting seemed to be sincerely interested in the scientific and other aspects of the program.

The next meeting of the Sixth District will be held in Baton Rouge.

MEETING OF THE ORLEANS CHAPTER OF THE AMERICAN ACADEMY OF GENERAL PRACTICE

The Orleans Chapter of the American Academy of General Practice held the regular monthly meeting Friday, October 29, at Hutchinson Memorial, Tulane University.

Dr. Eugene Countiss gave an interesting talk on "The Diagnosis and Treatment of the Most Frequent Gynecological Complaints." The membership joined in a ten minute round-table discussion of these complaints.

The next meeting will be a dinner meeting at Lenfants Boulevard Room Monday, November 29 at 8 p. m.

The speaker will be Dr. H. S. Mayerson, Professor of Physiology at Tulane University, his subject, "The Physiology of Hypertension."

THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

The twelfth annual meeting of the New Orleans Graduate Medical Assembly will take place March 7-10, 1949, at the Municipal Auditorium. Fourteen divisions of medicine have selected eighteen distinguished guest speakers. The Assembly has been fortunate in bringing to the membership in years past physicians who were eminent in their fields. This list for the coming session is a worthy sequel and is most impressive. The guest speakers are:

Dermatology—Dr. C. Guy Lane, Boston, Massachusetts

Gastro-enterology—Dr. Albert F. R. Andreson, Brooklyn, New York

Gynecology—Dr. George H. Gardner, Chicago, Illinois.

Medicine—Dr. Russell L. Cecil, New York, New York; Dr. E. H. Rynearson, Rochester, Minnesota; Dr. Charles A. Poindexter, New York, New York

Neurology—Dr. O. Spurgeon English, Philadelphia, Pennsylvania

Obstetrics—Dr. B. P. Watson, New York, New York

Ophthalmology—Dr. Everett L. Goar, Houston, Texas

Orthopedic Surgery—Dr. J. S. Speed, Memphis, Tennessee.

Otolaryngology—Dr. C. Stewart Nash, Rochester, New York

Pathology—Colonel J. E. Ash, Washington, D. C.

Pediatrics—Dr. A. Ashley Weech, Cincinnati, Ohio

Radiology—Dr. Frederic E. Templeton, Seattle, Washington

Surgery—Dr. Reginald Smithwick, Boston, Massachusetts; Dr. John deJ. Pemberton, Rochester, Minnesota

Urology—Dr. J. A. Campbell Colston, Baltimore, Maryland.

Invitation of President—Dr. Frank Lahey, Boston, Massachusetts.

Following the meeting a postclinical tour to Mexico is planned, March 12-27. Arrangements have been made to leave New Orleans by Pan American clipper on Saturday, March 12. Headquarters in Mexico City will be at the new Hotel del Prado. A medical program has been arranged by doctors in Mexico City for March 14-15. The itinerary includes trips to Cuernavaca, Taxco, Pueblo, Fortin, Orizaba, Oaxaca, and other points of interest. For further information write to The New Orleans Graduate Medical Assembly, Room 105, 1430 Tulane Avenue, New Orleans 12, La.

The officers of the Assembly are to be commended for arranging so inviting a meeting.

NEW MEMBERS OF THE AMERICAN COLLEGE OF SURGEONS

The American College of Surgeons at the Convocation during the Clinical Congress in Los Angeles on October 22, 1948 received 943 fellowships and seven honorary fellowships were conferred. It is reported that this is the largest class of initiates since 1914. Fifteen surgeons from Louisiana were initiated. They are:

Paul J. Azar, Lafayette
George D. B. Berkett, New Orleans
Irvin Cahen, New Orleans
Isadore Dyer, New Orleans
Ben Goldsmith, Lake Charles
John J. Hallaron, New Orleans
John S. Herring, New Orleans
John A. Holmes, New Orleans
Harry Meyer, New Orleans
Charles H. Mosely, Jr., Baton Rouge
Edward W. Nelson, New Orleans
Warren L. Rosen, New Orleans
Leonard H. Stander, Baton Rouge
Harry M. Trifon, Shreveport
Charles R. Walters, New Orleans.

EXPLANATION OF VETERANS ADMINISTRATION FEE SCHEDULE

During the past year the Veterans Administration has established a fee schedule which is to govern fees in the so-called "Home Town Medical Care Program for Veterans." In this connection the Veterans Administration has asked that a letter of explanation be published in the various medical organization journals. The Journal of the A.M.A. published it in the May 22, 1948 issue. The Branch Medical Director, Dr. Lee D. Cady, has requested that the letter be again published in this journal in order that the entire membership may be informed as to the status and method of

procedure in arriving at the fee schedule. The letter follows:

"Dr. Morris Fishbein
Editor, The Journal of the
American Medical Association
535 North Dearborn Street
Chicago, Illinois
Dear Dr. Fishbein:

"It has come to my attention that considerable misunderstanding has developed throughout the medical profession concerning the establishment of fees for medical services to be paid private physicians participating in the so-called 'Home Town Medical Care Program for Veterans.' It has been contended that the Veterans Administration has arbitrarily established a Fee Schedule which represents the maximum amount which may be paid for any given service and which is, in effect, a National Fee Schedule. It has also been contended that the various State Medical Societies and other interested groups were not consulted when this Fee Schedule was adopted.

"In order to clear up any misunderstanding regarding this matter, it is desired to emphasize that my predecessor, Dr. Paul R. Hawley, had no intention at any time of establishing a National Schedule of Fees, nor do I contemplate doing so. However, the Fee Schedules originally submitted by the various State Medical Societies, when the 'Home Town Medical Care Program' was inaugurated, varied so widely in format, terminology, and fees for similar or identical services, that it was deemed advisable to establish a uniform Fee Schedule Format and to set up tentative fees which could be used as a guide by the various State Medical Societies when submitting their proposals for the furnishing of medical care to veterans.

"This uniform Fee Schedule Format was formulated by the Professional Group of National Consultants to the Chief Medical Director. This Group, representing the various specialties in medicine and surgery, is composed of eminent physicians from all parts of the country. Tentative fees were set up in the format after a careful analysis of Pre-Paid Medical Care Plan, Workmen's Compensation and Insurance Fee Schedules, and also the Fee Schedules in effect in the various States having agreements with the Veterans Administration. As was to be expected, considerable variation occurred in the Fee Schedules reviewed. The Professional Group of National Consultants made every effort to arrive at fees that were considered to be within reasonable limits and which would, as nearly as possible, allow a uniform provisional fee schedule for use as a guide in facilitating and expediting the preparation of agreements between Station Medical Societies and the Veterans Administration.

"Further attempt was made to provide for elasticity in the charges for certain operations or other services which seemed to evoke more than average contention by listing the minimum and maximum amounts considered equitable. These items bear the notation 'AA', which indicates that the fee for the given service is to be determined by arbitration and agreement between the Veterans Administration and the Medical Society concerned.

"May I reiterate that the Veterans Administration Fee Schedule Format is in no sense to be construed as an arbitrary or National Fee Schedule. Furthermore, it is subject to periodic review and such modification as conditions may indicate.

"If it meets with your approval, I would appreciate it very much if you could possibly arrange to publish this as an open letter in the Journal of the American Medical Association. I should like this to reach all of the physicians throughout the country, and I know of no better way to do it than through the Journal.

"Very truly yours,
(Signed) PAUL B. MAGNUSON
Chief Medical Director"

POSTGRADUATE COURSE IN ENDOCRINOLOGY

The Postgraduate Committee of The Association for the Study of Internal Secretions, under authority of its Council, announces a course of lectures and demonstrations in clinical endocrinology to be held in Oklahoma City at the Skirvin Hotel, February 21 to 26, 1949, inclusive.

The faculty will consist of prominent investigators and clinical endocrinologists in the various branches of the medical sciences, gathered from the United States and Canada.

This course will be a practical one of interest and value to both the general practitioner and the specialist.

A fee of $100 will be charged for the entire course and the attendance will be limited to 100. Registration will be in order of checks received. Should there be an insufficient number of applicants to warrant the course, the registration fee will be immediately refunded in full.

Please forward application on your letterhead, together with check payable to The Association for the Study of Internal Secretions, to Henry H. Turner, M. D., Chairman of the Postgraduate Committee, 1200 North Walker Street, Oklahoma City 3, Oklahoma.

Due to other meetings being held in Oklahoma City at the time of this assembly, satisfactory hotel accommodations will be difficult to procure on short notice; therefore, it is suggested that applicants make their reservations EARLY, directly with hotels of their choice. Some of the better downtown hotels in Oklahoma City, listed according to their proximity to the Skirvin, are: Skirvin Tower, Huckins, Wells-Roberts, Biltmore and Black.

BOOK REVIEWS

Practical Bacteriology, Hematology, and Parasitology: By E. R. Stitt, Paul W. Clough, Sara E. Branham and contributors. 10th ed. Philadelphia and Toronto, The Blakiston Co., 1948. Pp. 991. Price, $10.00.

Like an oak this reference book has grown from a small but vigorous seedling (first edition, 1909) to a sturdy tree having branches which embrace the area of the modern clinical laboratory. As the title suggests, the volume encompasses the three main subjects involved in the laboratory diagnosis of disease, namely bacteriology, hematology and animal parasitology, while a fourth section considers diagnosis from an antomical standpoint.

Part I (Bacteriology) includes a chapter on basic principles in bacteriology, then proceeds to consider the morphologic and cultural diagnostic characteristics of the cocci, spore-bearing bacilli, gram-positive and gram-negative bacilli, spirochetes, rickettsias, filtrable viruses and pathogenic fungi. The remaining chapters on immunity, media and reagents, and staining methods and special procedures complete Part I. In the opinion of the reviewer these subjects are well-balanced, modern in their presentation and clearly presented. This portion of the volume requires 373 pages of text, and contains excellent photographs, particularly good in illustrating the fungi, and one color plate on bacteria (facing page 90).

Part II (Hematology) is presented in three chapters and slightly less than one hundred pages. There are three exceilent color plates. While this portion of the book may seem somewhat skimpy to the professional hematologist, it includes all of the material essential for a diagnosis of the diseases of the blood and blood-forming tissues, as well as the standard criteria for interpreting other disease processes through a study of blood cells and plasma.

Part III (Parasitology) is the most authoritative and comprehensive one on the subject found in any text of clinical laboratory medicine. The reviewer, whose special field is presented in this part of the book, has been particularly careful to look for out-dated information, inaccuracy in statement and interpretation, and inconsistency in nomenclature. No such errors have been encountered. The information is accurate, up-to-date and well handled, whether it be in intestinal protozoölogy, malaria, the leishmaniases, trypanosomiases, helminthic infections of the intestine or elsewhere in the body, and arthropods, other invertebrates or vertebrates as causative agents and carriers of disease. This portion of the text requires fourteen chapters and 252 pages. It is abundantly illustrated. There are two good color plates illustrating the malaria parasites.

Part IV (Clinical and Pathologic Examination of the Various Body Fluids and Organs) will appeal particularly to the clinician who desires concise, comprehensive information on what to expect and how to make diagnosis from material obtained from the patient or at necropsy. The convenient presentation of this mass of information by anatomic source serves as a useful cross reference to the other sections of the book where the data are assembled etiologically.

In addition, there is an Appendix, describing apparatus and its use, tables of standard values, anatomic and physiologic norms, injuries caused by toxic plants, and standard laboratory procedures for diagnosis of diseases indexed alphabetically by diseases. There is a comprehensive subject index, but regrettably there is no author index and relatively few source references are cited in the body of the text. (A single exception occurs at the end of Chapter 44, Vitamins as Specific Food Factors, with a brief bibliography on pages 906-907.)

The volume is beautifully printed and attractively bound. It should be available for immediate reference in the office and laboratory of every physician.

ERNEST CARROLL FAUST, PH. D.

Human Physiology: By F. R. Winton, M. D., D. Sc. and L. E. Bayliss, Ph. D. Philadelphia, The Blakiston Company, 1948. Pp. 592. Price, $7.00.

This is the third edition of a text by the same authors, which was first published in 1930. In

their preface to the first edition, the authors indicated their desire of having a text book which would stimulate the medical student to know less and think more. Accordingly material was omitted rather than compressed and the result was a very interesting and somewhat unusual approach. The new edition follows this same pattern. The text has been kept small while still including a considerable amount of information. Many of the chapters have been revised and some rewritten. The style and arrangement of the material are good and the student will have little difficulty in grasping the concepts which the authors are suggesting. Many of the newer methods of studying physiological processes are given and references are made to recent advances in the various fields. The only criticism which the reviewer has to make is the small amount of space given to the discussion of circulation. From a practical point of view, the medical student will be called upon to display a rather detailed knowledge of circulation after he leaves his course in physiology. Much of his work during his clinical years will be concerned with diseases of the circulatory, respiratory and excretory systems. It would seem, therefore, that in a volume of almost 600 pages, more than 60 pages should be devoted to the study of heart and circulation and, in this particular volume, less space might have been used to discuss the nervous system. On the whole, however, the text can be recommended to the medical student and physician as an excellent text which is shorter and easier to read than some of the more complete texts on human physiology which are now available.

H. S. MAYERSON, PH. D.

The Hospital Care of Neurosurgical Patients: By Wallace B. Hamby, M. D., F. A. C. S. Springfield, Ill., Charles C. Thomas, 1948. Pp. 156 illus. Price, $3.00.

The first edition (1940) of this handbook which Hamby wrote for internes and nurses apparently found a wide appeal among practitioners. Perhaps the author had forgotten how completely neurosurgery is unlike general surgery. This second edition, however, has retained the appealing simplicity of the first one. This handbook contains information not only about the care of the neurosurgical patient who might fall into the general surgeon's hands but it also affords some idea of the nature of the neurosurgical treatment to be offered the general surgeon's patients when they are referred to a neurosurgeon. This alone makes the book worthwhile to the practitioner not doing neurosurgery.

Four new topics have been added: Relations of the House Officer, Cerebral Arteriography, Ventricular Decompression and Prefrontal Lobotomy. The discourse on relations of the house officer, which is quoted directly from Crile and Shively's "Hospital Care of the Surgical Patient," is an unfortunate addition to an otherwise clear-cut compendium. Even if it were good it has no place in the handbook. The remarks about prefrontal lobotomy are pertinent, clear and comprehensive, indeed, bearing the mark of Walter Freeman to whom proper credit has been given. Sodium pentothal is considered the anesthetic of choice in carotid arteriography and the endotracheal tube the safest method, especially with a team unaccustomed to this procedure.

Of convenient size and adequately illustrated with uniform line drawings, this handbook is recommended for any medical office or hospital library.

FREDERICK C. REHFELDT, M. D.

Handbook of Ophthalmology: By Everett L. Goar, A. B., M. D., F. A. C. S. St. Louis, The C. V. Mosby Company, 1948. Pp. 166. Price, $5.50.

This handbook of ophthalmology was prepared (originally in looseleaf form) for his own students by the Professor of Ophthalmology at the Baylor University College of Medicine, with the laudable purpose of making ophthalmology a little simpler for the junior medical student, who, says the author sympathetically in his preface, already "has some twelve other subjects to be concerned about."

The book admirably fulfills the author's purpose. It is an excellent text for a beginner who has just been exposed to anatomy and physiology and who is likely to be overwhelmed by the mass of material in the larger standard texts. It is also a useful book for the general practitioner to have at hand for ready reference.

The eighteen chapters which make up the text deal in brief but remarkably comprehensive fashion with the history of ophthalmology; the anatomy, embryology and physiology of the eye; methods of examination, including the use of the ophthalmoscope; refraction and lenses; and the possible diseases and anomalies of the various anatomic structures of the eye. There are special chapters on glaucoma, intraocular tumors, and strabismus, a chapter on the eye in general disease, and a concluding chapter on injuries of the eye, first aid, and ocular therapeutics.

The book is well organized and clearly presented and has the great advantage of being small. The majority of the illustrations are borrowed from other texts, which is a commendable method of keeping costs down.

Almost the only adverse comment one might make on the book has to do with the index. It is suggested that when the next edition is published—the merits of the text suggest that this should be in the not too distant future—the index might profitably be re-examined. It could be more complete as well as more illuminating. To illustrate: The item crystalline lens (listed only as lens) is followed by the listing of development anomalies, cataracts and dislocations. But the term crystalline lens is also listed as such, the page references in this listing dealing with the anatomy of the structure as well as with the general section on the subject. Finally the term appears again under the listing of (trial) lenses, where it assuredly does not belong.

These are, however, minor criticisms of a book of major excellence.

WILLIAM B. CLARK, M. D.

Principles Governing Eye Operating Room Procedures: By Emma I. Clevenger, R. N. St. Louis, The C. V. Mosby Company, 1948. Pp. 215. Price, $5.50.

This is a book which deserves a hearty welcome. There has been a place for it for a long time. It should prove of use to supervisors of eye operating rooms in specialty hospitals, particularly those who are somewhat new to their tasks. It should prove of even greater use to operating room supervisors in general hospitals in which operations on the eye are not performed often enough to permit familiarity with the ophthalmic surgeon's needs to be achieved.

Miss Clevenger's position as supervisor of the eye operating room in the New York Eye and Ear Infirmary, which is one of the largest and best specialty hospitals in the country, has furnished her with ample opportunities to observe the work of the most competent ophthalmic surgeons in the country, as one of the best of them, Dr. Conrad Berens, notes in his foreword. The book is thus an epitome of the author's own wide experience and of the practices of this special hospital, practices which might well be emulated everywhere.

It would be hard to mention any necessity of the eye operating room which is not listed in this book or any surgical procedure on the eye which is not provided for. The numerous illustrations (which would be improved by being given numbers, to permit cross reference) are informative and generally excellent.

This is a book, on the other hand, which would be greatly improved by drastic editing. The presentation of the material is not entirely logical; special instruments, for instance, are listed and described before the basic operating room equipment is mentioned. Space and words are both wasted. In the section on the care and handling of eye instruments, for instance, the paragraphs headed, respectively, "Methods of Sterilization" and "Care (Sterilizing)" deal with precisely the same matters and the presentation would be clearer and more forceful, as well as considerably shorter, if they were combined. Quotation marks are used unnecessarily and irritatingly. Such terms as clean, contaminated, emergency table and scrub up are fully accepted medical terms, while such words as electrode and keratome in quotation marks merely distract the reader's attention. It is hard to see, furthermore, how such captions—they are numerous—as "Eye specula illustrated" and "Knives illustrated" could have escaped editorial pruning.

One other adverse criticism might also be made: The text states that the interne who secures the history and examines the patient marks the eye to be operated on with a cross of brilliant green or methylene blue, which is, of course, correct. But

there is no mention of any check of the correctness of the mark in the operating room, though this precaution should surely never be omitted in view of the unspeakable tragedy which could follow operation on the wrong eye.

These criticisms all concern readily correctible matters. In spite of them, this is an excellent book, which deserves wide circulation and which will undoubtedly prove of great usefulness in operating rooms throughout the country.

WILLIAM B. CLARK, M. D.

Hemostatic Agents: By Walter H. Seegers, M. S., Ph. D. & Elwood A. Sharp, M. D., Sc. D. Springfield, Illinois, Charles C. Thomas, 1948. Pp. 131. Price, $4.50.

Of interest both to the clinicians and preclinical scientists this review is concerned essentially with recent developments in the field of blood coagulation and hemostatic agents. In the first chapter the mechanism of blood clotting is discussed with special reference to the roles played by thromboplastin, prothrombin, calcium, thrombin, fibrinogen, vitamin K and heparin. This is supplemented by a consideration of other factors concerned in the coagulation process such as antithrombin and fibrinolysins. The reactions between these principles are clearly illustrated diagrammatically. It is pointed out that in the complex system of interactions involved in the clotting of blood only certain factors can coexist in plasma. "These are prothrombin, fibrinogen, antithrombin, fibrinolysin inhibitor, profibrinolysin and calcium. Others such as thromboplastin, heparin and profibrinolysin activator need to be supplied in a special manner by the living organism."

The remainder of the book is concerned with hemostatic agents available for clinical use. Thrombin, fibrinogen and oxidized cellulose are discussed at length with fibrin foam and gelatin sponge receiving briefer treatment. In several instances the application of these preparations in specific operative procedures such as prostatectomy, pilolithotomy, skin grafting, etc., is described in detail. They have undoubtedly gained an important place in general and specialized surgery. Available information is also given on the physical and chemical properties of these agents. The text is supplemented with illustrations, graphs, tables, and a bibliography of 370 references.

RALPH G. SMITH, M. D.

Correlative Neuroanatomy: By J. J. McDonald, M.S., M.Sc.D., M.D.; J. G. Chusid, A.B., M.D.; J. Lange, M.S., M.D. 4th Ed. Rev. Palo Alto, Calif. Univ. Med. Pub., 1948. Pp. 156. Illus. Price $3.00.

The wealth of easily available information contained in the loose-leaf pages of this small volume is truly amazing. The authors have used the outline form to correlate in each of the three sections the significant findings of neuroanatomists, neurophysiologists and clinical neurologists. A listing of headings appearing under one of the cranial nerves will illustrate the correlation: gross anatomy, motor and sensory components and their peripheral and central connections, conditions affecting the nerve, symptoms of involvement, syndromes, tests and references. The diagrams of each of the cranial and spinal nerves and their plexus relations (Sec. I) alone are worth the price of the book.

Section II, entitled "Principles of Neurodiagnosis," covers not only the anatomy and physiology of the spinal cord and brain but also the subjects of motion, sensation, reflexes, trophic changes, cerebrospinal fluid, intracranial pneumography, electroencephalography and electrical examination.

In section III, under the heading of diseases of the central nervous system, are covered such subjects as congenital defects, vascular defects, infections, trauma, tumors and degenerative diseases of the central nervous system, and epilepsy.

The outline is concluded with listings of muscular dystrophies and atrophies, neurological signs and syndromes and an outline to follow in making the neurological examination.

This edition contains several new illustrations which add to its value. The section on electroencephalography with typical tracings is new, and Section III has been rewritten and enlarged.

THEODORE SNOOK, Ph. D.

A-B-C's of Sulfonamide and Antibiotic Therapy: By Perrin H. Long, M. D., F. R. C. P. Philadel-

phia, W. B. Saunders Company, 1948. Pp. 231. Price, $3.50.

The author of this book is a recognized authority in the field of sulfonamide and antibiotic therapy. His investigations have contributed materially to our knowledge of the proper clinical use and pharmacology of these drugs and date from the earliest introduction of the sulfonamides in this country. He has presented a concise coverage of the pharmacology and therapeutic application of the sulfonamides, penicillin, streptomycin and tyrothricin. Some of the newer antibiotics still in the experimental stage are not included.

The first section outlines established dosage schedules where such exist, preparation of solutions, practical clinical pharmacology, toxic manifestations and various hints which contribute to the successful use of these agents. In the remainder of the book well over one hundred pathologic conditions in alphabetic order are discussed briefly under the headings, etiology, specific therapy, auxiliary therapy and comment. In the greater number of these conditions the above drugs are of value either as specific or auxiliary therapy. Some diseases are included for which they are occasionally used, but in the opinion of the author without justification. A conservative attitude regarding indications for therapy is evident throughout. Especially noteworthy in this regard is the strong stand taken against the topical application of sulfonamide and penicillin preparations due to the danger of sensitization. Furthermore it is stressed that "the proper evaluation of alleged or real manifestations of toxicity is one of the important phases of the intelligent use of these compounds." The dangers of the toxic reaction must be weighed against those of the infection and after consideration of possible alternatives of therapy a decision must be made.

The practicing physician will find this an extremely useful reference book sufficiently brief to be consulted within a few minutes and small enough to be carried in his coat pocket.

RALPH G. SMITH, M. D.

Intracranial Tumors: By Percival Bailey, Springfield, Ill., Charles C. Thomas, 1948. Pp. 478, Illus. Price $10.50.

In the second edition of this now famous book many errors of the first (1933) edition have been corrected and some new facts and an atlas of roentgenologic photographs have been added. The photographs are splendid reproductions of roentgenograms of the skull, offering a wide span of cranial and intracranial pathologic conditions. The arteriograms are especially worthwhile.

To praise this book would only be dull repetition. Yet it is believed that too many physicians, regardless of their special interest, are unaware of the vast store of information (anatomy, physiology, pathology and clinical) which it offers. The manner of presentation hydrates a too often desiccated subject. The plan of presentation is clinical, practical and authentic. This book is recommended without reservation to anyone interested in medicine.

FREDERICK C. REHFELDT, M. D.

Treatment of Heart Disease: By William A. Brams, M.S., M.D., Ph.D., Philadelphia, W. B. Saunders Co. 1948. Pp. 195. Illus. Price $3.50.

This monograph is written as a guide in the treatment of heart disease. It is based principally on the author's own experience, however, there are six pages of bibliography. Diagnosis and methods of examination are not gone into, neither is there any extensive discussion of the variations in treatment that might arise in a given case. He believes that if the physician is familiar with the pharmacologic action of drugs used in the treatment of heart disease and its complications he will be able to meet these variations.

The first chapter is devoted to a discussion of the drugs used in the treatment of heart disease. The discussion of the pharmacologic effect of digitalis and its use at the bedside seems to be sound and conservative. The reader is reminded of the possibility of toxic manifestations of small doses of digitalis in the presence of severe myocardial disease. This is some times overlooked. His advice not to reduce the heart rate below 70 or 80 beats per minute when the myocardium is badly damaged by disease, thereby leading to extensive filling of the heart which would be undesirable under these circumstances, is sound and reasonable.

He considers the standard preparations of digitalis which are generally used to be pills or capsules containing the powdered leaf or the tincture. He thinks the physician should become thoroughly familiar with a given brand of these preparations. It might be said that the tincture could be discarded with very little inconvenience. The reviewer has felt for a long time that it is very important that the physician familiarize himself with one or two brands of pills or capsules of the whole leaf of digitalis and not to be constantly changing from one preparation to another. It is also necessary that he know one preparation suitable for intravenous administration for use in emergencies. There has been a recent report of thirty cases of digitoxin poisoning observed by one man in thirteen months, proving again the lack of understanding of the use of the different preparations of digitalis.

Under dosage of digitalis he divided patients into those of moderate cardiac failure, severe cardiac failure, and very severe cardiac failure. The amount and the time over which it is given varies in these three types of patients. The drug should be given by mouth, unless some definite reason exists for the use of a different route.

The use of digitalis is recommended as a diagnostic and prognostic aid. The reviewer has the impression that physicians generally are not familiar with this side of digitalis therapy. There is a short discussion of other digitalis-like drugs and mercurial diuretics. The author seems to have little faith in the use of xanthines in the treatment of coronary disease and advises if one wishes to continue this ritual he should at least choose a preparation which is not likely to induce gastrointestinal upset. He thinks theobromine calcium salicylate is probably best. There are many who share this same opinion.

He considers quinidine an effective but dangerous drug. It might be best to say quinidine given properly is not a really dangerous drug when given by those who understand the indications, toxic manifestations, and dosage.

Chapter two is devoted to the treatment of congestive heart failure. The recommendations for bed rest, the use of digitalis, sedatives, diuretics, diet, and treatment of special features such as severe dyspnea, Cheyne-Stokes respiration, cardiac asthma, etc. would probably meet the approval of most cardiologists.

Chapter three is devoted to the treatment of diseases of the coronary arteries, including acute myocardial infarction with its complications, angina pectoris, etc. The recommendations made here probably represent the procedures followed by those of experience.

The chapter on the treatment of disturbances in cardiac rate and rhythm mentions about all the drugs that are used in these conditions and calls attention to the fact that the treatment of extrasystoles is often unsatisfactory and they are generally harmless and reassurance is usually all that is needed. Extra systoles that are due to organic heart disease may be serious and might be relieved by treatment.

In the treatment of paroxysmal tachycardia, supraventricular, ventricular, auricular fibrillation and auricular flutter the drugs mentioned are those usually employed in these conditions. He considers digitalis a dangerous drug in ventricular tachycardia.

There are about two and a half pages devoted to the discussion of sino-auricular block and auriculoventricular block. The treatment recommended is along the usual lines and is sufficient for ready reference. The treatment of cardio-aortic syphilis is based largely on the teachings of J. E. Moore. There is a short discussion of congenital malformation of the heart and great vessels. Attention is called to the great help rendered by surgery, penicillin, and other antibiotics.

The author believes that the treatment of hypertension is still unsatisfactory and that nervous or emotional strain is an important factor. The patient should be assured and encouraged, avoiding frequent determinations of the blood pressure. Moderation in work and exercise and a calm state of mind are frequently sufficient for the average patient with asymptomatic hypertension.

In hypertension with cardiac symptoms he speaks of bed rest, sedatives and some of the nitrates. He questions the advisability of the use of thiocyanates. He considers diet an important element in the treatment of hypertension and speaks favorably of the Kempner plan and advises that more conservative measures should be tried before surgery is resorted to. There are many of wide experience who will agree with the statements made here.

The opinions expressed in the chapters on the heart in endocrine, metabolic disorders, and heart disease in pregnancy and surgery practically represent those generally held by cardiologists with an occasional statement that needs emphasis such as, "Congestive heart failure can be recognized by a careful history and a meticulous physical examination rather than by instrumental or laboratory aid" or one that may be called into question such as the statement on page one hundred sixty-eight, that intraventricular or bundle branch block is generally due to widespread myocardial disease and should be regarded as a serious surgical risk.

This is a little difficult to accept when one observes patients with either right or left bundle branch block that live a normal life for twenty and twenty-five years without heart failure.

This book should prove very helpful as a quick reference in the treatment of various types of heart disease and is recommended.

J. M. BAMBER, M. D.

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